APPENDIX 8.8

PHASE 2 REPORT

Geosyntec consultants

engineers | scientists | innovators

Phase 2 Environmental Assessment of the Nestlé Site in Hayes, Middlesex (Final)

Prepared for

Nestlé UK Ltd

Prepared by

Geosyntec Consultants Ltd.
1st Floor, Gatehead Business Park,
Delph New Road
Delph, Oldham
OL3 5DE

Project Number GCU0124024

June 2014

Geosyntec
consultants

Project Title:	Phase 2 (A&B) Environmental Assessment of the Nestlé Site in Hayes, Middlesex
Project No:	GCU0124024
Report Ref:	GCU0124024 Phase 2 Final Report
Status:	Final (Private & Confidential)
Client:	Nestlé UK Ltd

Client Details:

Nestlé UK Ltd
1 City Place
Gatwick
RH6 0PA

Issued By:

Geosyntec Consultants Ltd
1st Floor Gatehead Business Park
Delph New Road
Delph
Oldham, OL3 5DE

Document Production / Approval Record (final documents only)

	Name	Signature	Date	Position
Prepared by	Nick Roe		June 2014	Project Manager
Reviewed & Approved by	Dr. Marcus Ford		June 2014	Project Director

EXECUTIVE SUMMARY

Geosyntec Consultants Ltd (Geosyntec) was retained by Nestlé UK Ltd (Nestlé), to conduct a Phase 2 assessment of potential soil and groundwater contamination sources at the Nestlé Facility on North Hyde Gardens in Hayes, Middlesex. These investigations aimed to understand the potential for and the scale of potential liabilities associated with ground contamination at the site.

The Phase 2 programme of intrusive investigations followed, and was based upon the findings of, a detailed Phase 1 audit of the site, which has been reported separately but summarized herein. The overall Phase 2 Environmental Assessment was split into two distinct tasks:

- *Phase 2A – an assessment of broader groundwater quality within the sand and gravel and Chalk aquifers beneath the site (both classified as Principal Aquifers), in order to provide an understanding of whether a significant groundwater liability exists at the site derived from on-site or possibly off-site operations, and;*
- *Phase 2B – a targeted soil source zone investigation of potential contamination issues identified in the Phase 1 report, associated with hydrocarbons and mercury, and possible unknowns such as hazardous chemical or waste (including solvent) storage and use areas and Made Ground quality. This mainly targeted shallow soils (Made Ground and subsoils).*

As indicated above the main purpose of this investigation programme was to define the apparent magnitude and extent of the soil and groundwater liability that may have to be managed under a site closure, sale and redevelopment scenario. However, consideration has also been given to a need for the Nestlé Hayes facility to hand back its IPPC permit, linked to the on-site boiler house operation (Combustion >50MW), which in 2007 replaced a previous IPC authorisation for the site. It is noted that a focused investigation, specifically linked to the presence of asbestos containing material beneath the main building, is being undertaken (and will be reported) separately.

Main Phase 2 Investigation Findings

The key findings of this Phase 2 Environmental Assessment of the Nestlé Hayes facility can be summarised as follows:

Site Geology & Hydrogeology

- *The main shallow groundwater flow path beneath the site is predominantly within the highly permeable sand and gravel aquifer unit (River Thames Terrace Gravels), the top of which is typically found at a depth of around 1.5-2.5 metres below groundwater level (mbgl). This is classified as a Principal Aquifer which is vulnerable to pollution due to the close proximity of the ground surface;*
- *Groundwater flow within the sand and gravel aquifer is inferred to be broadly towards the southeast, with expected base flow into the River Crane, located ~150m to the east of the eastern site boundary (refer to Figure 1), but from around 200m or more down gradient of the site given the reported southeasterly groundwater flow direction (refer to Figure 5b);*
- *It is noted that the canal water level appears marginally lower than groundwater levels which indicates that there is a local hydraulic gradient to the north, close to the canal, and potential*

groundwater flow locally in this direction. However canals, by design, are lined with low permeability material (such as clay) to prevent them leaking, and has such there can be expected to be only very limited groundwater flow in this direction;

- *The sand and gravel aquifer is thin, typically comprising 1.5-3m of high permeability lithology. It is overlain in part by clayey gravel and/or gravelly clay. It is directly underlain by London Clay, which separates it from Chalk bedrock at depth. The thickness of the London Clay aquiclude is understood to be approximately 60m thick below the site (from the onsite abstraction well borehole log) and therefore should protect the Chalk aquifer from surface activities (i.e. the Chalk is not vulnerable to pollution);*

Made Ground & Sub-Soil Contamination Results

- *No volatile organic compounds, including chlorinated aliphatic hydrocarbons, were detected at significant levels (rarely detected at all);*
- *The area within and around the footprint of the former and existing boiler houses, extending to the north of these to the former heavy fuel oil (HFO) and diesel tanks, and along the strip of the site between the main building and the canal, commonly exhibited visual and/or olfactory indications of hydrocarbon contamination (refer to Figure 6). Whilst this area was subject to extensive soil excavation and corrective action around the time of the late 1990s when fuel oil entered the canal, it is clear that residual contamination remains. In this area there appears to be a relatively widespread up to ~0.5m thick band of residual fuel impacted soils starting at a depth of between about 0.5-1m;*
- *The distribution of hydrocarbon contaminated soils, as reported by the laboratory, follows a similar pattern (refer to Figure 7), although reported concentrations are not that high (only 8 locations reporting total petroleum hydrocarbons (TPH) above 50 mg/kg, with most in the 100s mg/kg range and comprising both aromatic and aliphatic components in most cases. One sample contained much higher TPH (about 17,500 mg/kg) and this was collected centrally from the footprint of the former boiler house. Because the hydrocarbons detected were typically long chain heavy-end fractions, no TPH result was above commercial end-use Generic Assessment Criteria (GAC). In the case of potential residential end use up to 3 locations had TPH Hazard Quotients >1. No PCBs were detected where samples were collected;*
- *Poly aromatic hydrocarbons (PAHs) are a component of fuel oils and can be a risk driver in shallow soils. Low levels of PAHs were quite widespread in shallow soils beneath the site (refer to Figure 8). Typically a range of individual PAH compounds were reported. 8 samples had >10 mg/kg total PAHs, including 3 samples in the 100s to low 1,000s mg/kg range. Some of these higher results were from soils in the southern half of the site. This included the peak concentration (2,001 mg/kg in WS28), which was in the southeast area and thought to be associated with the presence of industrial slag material as a component of the Made Ground locally, noting this sample did have a slight hydrocarbon odour and contain some TPH;*
- *In the case of PAHs the commercial GAC was only exceeded for 3 sample locations, 2 in the area of the boiler house and the third the peak concentration in the southeast area. In the case of potential residential end use, 8-9 sample locations failed respective GACs, and these locations were widely distributed (Figure 8);*

- *Trace metal and metalloid results for soil samples highlighted the presence of 4 main contaminants of potential concern in this respect, namely mercury; arsenic; chromium 6^+ and lead (refer to Figure 9). Of these lead and chromium were only found to be relatively elevated very locally (2 marginal exceedences of commercial and/or residential GACs for lead and one residential GAC exceedence for chromium, all in the northern area of the site). In the case of arsenic there were no commercial GAC exceedences but 4 residential GAC exceedences, again all in the northern area of the site (including close to the hazardous chemical and waste storage compounds);*
- *In the case of mercury, this was by far the most widely reported of the trace metals, albeit at low to trace levels typically (refer to Figure 10). The mercury present was initially expected to be in the form of elemental mercury given the known source of mercury release in the past was due to small scale losses from mercury switches. However, speciated mercury soil analysis was carried out for which it was reported that the elemental mercury was not a dominant species within the total mercury composition. Comparing the speciated soil mercury results with GACs for mercury indicates that none of the elemental or inorganic mercury results are above the respective GAC's for residential with plant uptake or commercial end use;*
- *Locally asbestos containing material (ACM) was found in shallow soils samples (6 of 39 samples screened). Four (4) samples contained fibres (rather than bound ACM). These were reported at very low levels (≤0.001% by mass), in samples that did not visibly contain ACM. They mainly comprised the chrysotile form, the least hazardous type; although it is noted that exposure to all fibrous asbestos is to be avoided. All of these 4 samples were from the area close to the two boiler houses, where hydrocarbon related impacts have also been identified;*
- *Initial soil gas monitoring has not reported elevated landfill gas concentrations (methane; carbon dioxide). One exception to this was WS3, however this was confirmed to be associated with a gas pipe leak which we understand has been subsequently repaired.*

Groundwater Contamination Results

- *Deep (Chalk aquifer) groundwater has not been found to be contaminated;*
- *Shallow groundwater (specifically within the sand and gravel aquifer) has been found not to be impacted by petroleum hydrocarbons (TPH), even in the northern boundary area where soil hydrocarbons contamination is quite widespread. This reflects the immobile nature of long chain, heavy end hydrocarbon fractions present, which appear to be predominantly linked to HFO. Also no impacts on groundwater by volatile organic compounds (VOCs) has been found;*
- *Shallow groundwater is impacted by what may be considered trace levels of certain PAH compounds, plus the trace metals and metalloids, arsenic, nickel and mercury and limited hexavalent chromium (Cr^{6+}), some likely derived from leaching of Made Ground materials and the residual fuel contaminated zone. Mercury impacted groundwater was only observed in BH1, likely derived from historic losses of elemental mercury to ground (from historic losses from mercury switches);*

- *A Preliminary Controlled Waters Risk Assessment exercise, for the sand and gravel aquifer, identified certain PAHs, chromium 6+, mercury and nickel concentrations exceeding relevant Generic Assessment Criteria (GAC) for the protection of surface water and drinking water quality. Potential migration of contaminated groundwater off-site within the sand and gravel aquifer and its potential discharge to the River Crane was identified as the principal potential exposure pathway – receptor scenario;*
- *The 3 monitoring wells where reported PAH concentrations were most elevated (>1 µg/l) are all located in the northern area of the site where reasonably widespread soil contamination by hydrocarbon fuels has been identified (refer to Figure 6-8). These were BH1 (3-12 µg/l), BH2 (2-30 µg/l; much reduced in May 2014 sampling round) and BH9 (1.4 µg/l in February 2014 only). In more down gradient wells (BH3-6), closer to the down gradient eastern boundary reported, BH3 and BH5 reported no PAHs (< limit of detection (<LOD)), BH4 0.7 µg/l total PAHs and BH6 0.3 µg/l in December 2013 but <LOD in May 2014. Therefore, it appears that a reasonable level of attenuation is taking place in the shallow aquifer between the area of residual hydrocarbon contamination near the canal and the eastern boundary;*
- *The risk of significant PAH impact on the River Crane about 200+ metres down gradient of the boundary area wells is considered negligible, provided groundwater PAH concentrations remain at this level. Further, and particularly because the sand and gravel unit is a Principal Aquifer, the identified groundwater contamination must be stable to declining (must be no evidence of an expanding plume). Groundwater within the River Terrace sand and gravels, even though it is classified as a Principal aquifer, is not considered a plausible receptor in its own right, given the site urban/industrial setting, but rather a migration pathway to the local river. The Chalk aquifer at depth, has also been sampled twice during this investigation, via the site abstraction well and has not been found to be contaminated (this groundwater body is used locally for non-potable water supply locally and therefore is considered to be a receptor);*
- *Down gradient attenuation of dissolved phase mercury and nickel was apparent, with reported concentrations below laboratory method detection limits at or close to the down gradient site boundary (BH2 and BH5). Mercury and nickel contamination is inferred to have limited mobility in groundwater, under normal conditions, and unlikely to pose a risk to the wider aquifer or surface water receptors. However, with respect to mercury, there are a number of points of note here, as follows.*

Mercury Specific Discussion

- *The peak concentration of 41 µg/l mercury in BH1 is similar to aqueous solubility and therefore this suggests some free mercury has got into the shallow sand and gravel aquifer system in the past. Elemental mercury is very dense and if released into the subsurface would tend to migrate down through soil profiles until it reaches a low permeability horizon (in this situation the London Clay immediately beneath the sand and gravel aquifer);*
- *It was reported that elemental mercury was seen in soils during the CGCP enabling excavation, to the south of the existing boiler house, so it has been released at the site (in this area from to-be-expected small amounts of mercury in switches). Finding elevated groundwater concentrations in BH1 also suggests it has been released around the boiler house(s) building footprint (not just to the south). The site drainage plan shows localised in-*

floor drains for "dirty water" that are directed east and west within the existing boiler house. The east directed drains connect to the outside drainage system that passes close to BH1. The deeper underground ducts that link from the former boiler house to the Undercroft area in the main building are positioned between the existing boiler house and the CGCP. Released elemental mercury globules could have infiltrated into drains or deep structures and migrated within them until they encountered a point of poor integrity whereby they could have migrated down into underlying Made Ground or sub-soils, under their specific gravity;

- *Excavation associated with the CGCP development appeared to have gone to a depth of between 1.5-2m (WS31 reported 1.8m concrete infill), and the borehole logs for BH1 and BH8 highlight the depth to the top of the main sand and gravel aquifer is 2.4-2.5m. Whilst this excavation would not explain the presence of elevated mercury in BH1 groundwater on the northeast side of the boiler house, it might have allowed elemental mercury to migration to the base of the excavation (which if free to do so would do so rapidly) and inadvertently introduced mercury into the sand/gravel aquifer. Any small globules of elemental mercury in the shallow aquifer would be expected to reside at its base, with little potential for lateral movement once in a low spot;*
- *BH1 is located in a relatively up-gradient location of the site near the boiler house and canal. Groundwater sampled from 4 monitoring wells, which together are expected to represent groundwater that is down gradient of the Boiler House (BH1) area, namely BH2-BH5, did not detect mercury (refer to Figure 11). Consequently there does not appear to be a shallow plume of mercury contaminated groundwater migrating down gradient to the southeast in the sand/gravel aquifer;*
- *At the pH and ORP (redox) of BH1 groundwater the stable species of mercury is expected to remain as elemental mercury. However an important point to note, linked to possible mercury mobility in groundwater, is that elevated (alkaline) pH can greatly promote mercury migration. Analysis on samples taken during the period of December 2013 – May 2014, indicates that shallow groundwater in some site wells has become alkaline (pH8.5-9.7), specifically BH1-2, BH8 and WS22. In BH1, groundwater mercury concentration increased from 3 µg/l (at pH7.07) in December 2013 to 41 µg/l (at pH8.92) in February 2014. A similar trend is also observed within down-gradient well WS22 where between February and May 2014 pH has increased from 9.59-9.87 with a comparable mercury rise from 0.21 µg/l to 1.24 µg/l. It might be reasonable to assume that the increased pH, which may be due to some loss of sodium hydroxide used locally, and that this may be leaching more mercury from unsaturated shallow soils and within the aquifer. As such the ongoing monitoring of groundwater quality in the principal area of concern, close to and down gradient of the boiler house, is recommended during 2014 (along with internal audit of caustic storage and use to check that significant losses are not occurring);*
- *Even with an absence of a groundwater migration pathway for dissolved mercury due to hydro-chemical controls (if substantiated), if some elemental mercury remains in Made Ground, beneath and around the boiler house in particular, this represents a future risk to groundwater, if this area was redeveloped. This is simply because any open excavation and indeed structures (like foundation piles) run the risk of introducing mercury to greater depth and potentially into the sand and gravel aquifer. As a List 1 substance this is simply not*

allowed. It is noted that the pragmatic regulatory view might be expected to be that mercury, which has already locally migrated to depth in the past, and which is not causing deterioration of groundwater quality, would be acceptable to leave in-situ. List 1 substances must be prevented from entering groundwater and a developer of the site would have to adhere to this requirement, if the mercury contamination remained (something that would need preparatory work and planning, including contingency plans).

LIMITATION

Geosyntec Consultants Ltd (Geosyntec) has prepared this report for the sole use of Alps Group Ltd and Nestlé UK Ltd in accordance with the Agreement under which our services were performed. No other warranty, express or implied, is made as to the professional advice included in this report or any other services provided by us. This report may not be relied upon by any other party without the prior and express written agreement of Geosyntec, which will not be unreasonably withheld.

Unless otherwise stated in this report, the assessments made assume that the site and facilities will continue to be used for their current purpose without significant change. The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested. Information obtained from third parties has not been independently verified by Geosyntec, unless otherwise stated in the report.

Where assessments of works or costs required to reduce or mitigate any environmental liability identified in this report are made, such assessments are based upon the information available at the time and may be subject to further investigations or information which may become available. It is therefore possible that cost estimates, where provided, may vary outside stated ranges. Where assessments of works or costs necessary to achieve compliance have been made these are based upon measures which, in Geosyntec's experience could normally be negotiated with the relevant authorities under present legislation and enforcement practice, assuming a pro-active and reasonable approach by site management.

COPYRIGHT

© This Report is the copyright of Geosyntec Consultants Ltd. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1 GENERAL INTRODUCTION

1.1 Introduction

Following our Phase I site audit and assessment Geosyntec Consultants Ltd (Geosyntec) was retained by Nestlé UK Ltd. (Nestlé) to conduct a Phase 2 assessment of potential soil and groundwater contamination sources at the Nestlé Facility on North Hyde Gardens in Hayes, Middlesex (refer to **Figure 1**).

The overall Phase II Environmental Assessment was split into two distinct phases with the following focus:

- Phase 2A – an assessment of groundwater quality within the shallow sand and gravel (and Chalk) aquifers beneath the site, in order to provide a broad understanding of whether a significant groundwater liability exists at the site derived from on-site operations, or possibly offsite sources and;
- Phase 2B – a follow on targeted shallow soils investigation of both known former contamination issues associated with hydrocarbons and mercury, and possible unknowns linked to aspects such as hazardous chemical or waste (including solvent) storage and use areas, and Made Ground quality generally given the site age.

This report presents the findings of the now complete Phase 2 investigation programme. The original Phase 2A draft report, issued in mid-January 2014, has been updated upon completion of the Phase 2B works, to provide a complete Phase 2 assessment of potential soil and groundwater contamination liabilities at the site.

1.2 Project Background

To understand the potential for and the scale of potential liabilities associated with ground contamination issues at the site, Nestlé commissioned Geosyntec to undertake a Phase 1 desk study and site audit study (Final Report, reference GCU0124020, dated September 2013). The Phase 1 study sought to collate and assess information so that the potential presence, type and source of possible ground contamination issues could be assessed. The Phase 1 study (refer to **Figure 2** site plan showing key buildings and features) identified a number of potential sources of soil or groundwater contamination at or adjacent to the site, including:

- Potentially contaminated Made Ground (possible general site wide issue);
- Former underground fuel lines from bulk storage to the boiler house and other buildings;
- Known fuel (diesel and heavy fuel oil) losses associated with bulk storage and the boiler houses, with a specific link to a major loss event to the canal in the late 1990s;
- Possible remaining mercury contaminated soils below the boiler house area (discovered previously during local redevelopment and linked to former use of mercury containing switches);

- Use of hydrocarbons and chlorinated solvents in engineering workshops;
- The former garage located within the car park; and
- Losses of asbestos containing materials (ACM) to ground and apparent mixing with the shallow soil profile, specifically in the Undercroft Area (basement of Main Building) and associated deep service conduits. Both the Undercroft and service conduits have been investigated separately.

The possible sources of contamination identified were of potential concern to groundwater beneath the site. The site overlies an important shallow sand and gravel unit which is classified as a Principal Aquifer, and is reportedly vulnerable to pollution. The London Clay underlies the sand and gravel and is expected to afford a considerable level of protection to the deeper Chalk bedrock (another Principal Aquifer). A groundwater abstraction well in the central northern area of the site supplies water (from the bedrock Chalk aquifer) for boiler feed and cooling. Shallow groundwater within the sand and gravel aquifer may be expected to provide base flow to a nearby River Crane (200m to the east), that ultimately discharges to the River Thames (10km southwest). Groundwater underlying the site and surface waters such as the River Crane and the canal are designated as Controlled Waters.

Site operations are expected to cease entirely in late 2014. The proposed future use of the site is uncertain at this stage but it is understood that options could include manufacturing, food retail and/or residential redevelopment. It has been indicated to Geosyntec that the land value profile of the area suggests that either a mixed use (residential and commercial) or commercial end use may be most likely.

If present, there is some potential for shallow soil, soil gas and/or groundwater contamination to pose risks to future site users and/or the development. The intrusive investigation data collected and assessed is designed to further understand these potential impacts and their associated potential liabilities to Nestlé, as well as risk to Controlled Waters. In the future, to maximise the benefit of this assessment, it would be useful to combine the findings of this report with a more detailed understanding of potential future development design.

1.3 Objectives

The overall aim of Phase 2 investigations was to assess the current environmental (land and groundwater) condition of the site and to evaluate related potential liability associated with the site in terms of potential future site divestment. The specific objective for the Phase 2A study was to undertake an intrusive investigation to assess, in broad terms, the chemical character, magnitude and extent of groundwater contamination that may have resulted from current and previous or historic use of the site and possible adjacent sites.

The main objectives of the follow-on Phase 2B investigation programme were to:

- Reduce uncertainty regarding the nature, magnitude and distribution of potential groundwater contamination beneath the site; and
- Understand the distribution of ground (soil) contamination beneath the site by targeting potential source areas identified in the Phase 1 and Phase 2A assessments, and collecting some limited broader data.

The main activities undertaken to meet the overall Phase 2 objectives are described below.

1.4 Scope of Works

The scope of works completed for this Phase 2 (A & B) programme can be summarised as follows:

- Preliminaries & preparatory works;
- Intrusive site investigations: borehole drilling, associated field testing and soil sampling and analysis plus groundwater and gas monitoring installations;
- Groundwater (gas) monitoring and analysis; and
- Detailed data assessment and reporting.

1.4.1 Task 1 – Preliminaries & Preparatory Works

A number of activities were completed prior to mobilisation to site. These included:

- Obtaining utility plans from the statutory providers including gas, electricity, water supply, surface water drainage, foul sewer, telephone, etc. These plans along with those available from Nestlé were used by the underground service clearance subcontractor;
- Preparation of a Health & Safety Plan and submittal for client review prior to finalisation; and
- Liaison with Nestlé personnel/ site management to arrange work schedules and work area access.

1.4.2 Task 2 – Intrusive Site Investigation, Soil Sampling & Laboratory Testing

Buried Services Clearance

Underground service clearance was undertaken at all investigation locations by specialist subcontractor Site Vision Surveys (SVS), overseen by Geosyntec. Utility plans obtained as part of Task 1 were used in combination with lifting and rodding of manholes/accessible drainage, CATSCAN, Ground Penetrating Radar and induced electrical/radio signal detection methods, designed to accurately detect and trace buried services. Cleared drilling locations were marked on the ground by SVS.

Concrete coring was undertaken at locations (on hard standing) to allow access to underlying soils. Following removal of concrete cores, starter excavations were hand dug to

depths of 1.2 mbgl or to the top of undisturbed natural ground[1] (whichever was shallower). This was conducted prior to the start of drilling, and was designed as a secondary measure to safely assess shallow soils for the presence of buried services.

Drilling

Soil investigation locations and groundwater/ground gas installations are shown on **Figure 3**. Borehole logs and monitoring installation design drawings are included as **Appendix A**. Shallow soils (<2.0 mbgl) were investigated at a total of 34 locations (WS1-36)[2], 10 of which were installed with narrow diameter ground gas/groundwater monitoring wells. A total of 9 deeper groundwater monitoring wells were installed (BH1-9).

Shallow soil investigation locations (WS series) were drilled by a GEOTOOL GTR/GEOPROBE 66DT percussive rig using narrow diameter windowless sampling techniques. The sampling tool was advanced by percussion as far as possible; generally as far as the top of the sand and gravel aquifer unit at ~2.0 mbgl.

Deeper groundwater monitoring boreholes were completed to the desired depth using a Comacchio GEO 205 rotary/percussive rig. Drilling aimed to prove the entire thickness of the sand and gravel aquifer beneath the site. Drilling was typically stopped at each location once underlying London clay was encountered (the soil therein contained distinct firm-stiff clay strata, below coarse sand and gravels).

Soil Sampling

Sub samples of soil were collected from continuous soil cores using pre-cleaned stainless steel sampling equipment, for field testing and for laboratory analysis. Samples intended for field testing (head space analysis) were placed in to plastic bags, tied at the top and the soil there-in contained gently opened up (by hand). Soil was left in the bags for a short period to allow for equilibration of volatile organic compounds (VOCs). A Photo ionisation detector (PID, 10.6eV lamp) was used to pierce the sealed bag and analyse the total VOC concentration within the bag. These headspace results were used to guide selection of potentially contaminated soil for subsequent laboratory analysis. Separate samples intended for laboratory analysis were placed into labelled, laboratory supplied containers. Each sample was assigned a unique sample identifier and depth interval (samples were recorded on chain of custody forms). Samples were refrigerated before being shipped to the sub-contract laboratory (Jones Environmental Laboratory) in cool boxes with ice packs, following strict chain of custody procedures.

Soil samples were analysed by Jones Environmental Laboratory (an MCERTS accredited laboratory). Soil laboratory analysis certificates are provided in **Appendix B**. A soil sample inventory is included as **Table 1a and 1b**.

[1] As assessed by the Geosyntec site engineer
[2] Proposed investigation locations WS34 and WS35 were found to be unsuitable due to the presence of sub-surface voids

It should be noted that due to the presence of asbestos fibres in some of the soil samples provided, the laboratory analytical technique varied for some analytes between sample locations. For example, with respect to trace metal and metalloid analysis where asbestos was absent the soils where dried (at 30°C), ground up to homogenise, followed by acid digestion[3]. In the small number of samples which were found to contain asbestos then no drying or homogenisation was completed rather the sample was prepared via an aqua regia extraction method[4].

Widespread elevated mercury results were obtained from soil analysis carried out in December 2013 and February 2014. Mercury speciation testing was undertaken in May 2014 on soil samples retained at the laboratory from the earlier investigation programmes to assess the proportions of elemental and inorganic mercury present. Refer to Section 3.3 for the results.

Consideration was given to the potential for sample deterioration during storage between the first two sampling events in December 2013 and February 2014, and when the mercury speciation testing was undertaken in May 2014. Whilst partitioning from the elemental mercury, if present, to mercury vapour in the retained (sealed) sample bottles will have occurred, this can be expected to have been limited. This is because the vapour pressure of elemental mercury is low (0.07Pa or 0.0000006 atmospheres at 10^{o}C; and 0.26Pa at 25^{o}C). Taking the latter temperature to be more representative of longer term sample container storage conditions in the laboratory, the equilibrium mercury vapour concentration in the headspace within the sample jar can be estimated. This equates to 0.021 µg/cm^3. The stored 250ml sample bottles, as a reasonable worst case, may be expected to have about 50% headspace or 125ml or 125cm^3. The equilibrium (effective maximum) concentration in the headspace would therefore equate to a mass of about 3µg (0.003 mg/kg). Given total mercury concentrations were in the typical range of 0.1 mg/kg to a few 10s mg/kg and the GAC for elemental mercury is 0.17 mg/kg, such a small potential loss of elemental mercury from the retained and re-analysed samples can be considered negligible.

Monitoring Well Installation & Development

Deeper groundwater monitoring wells were installed with screened sections intersecting the sand and gravel aquifer unit. In select shallow boreholes ground gas/groundwater monitoring wells were installed with screened sections from 0.5 mbgl to base (commonly 2.0 mbgl). Monitoring wells were constructed of 25mm or 50 mm ID HDPE standpipes (see borehole logs, **Appendix A**) with top and bottom caps inserted. Washed and graded filter gravel was installed around the slotted sections of the well pipe (e.g., adjacent to the sand and gravel aquifer). Bentonite pellets were placed above the filter gravel, designed to create a seal between the ground surface and the screened section of the well (to prevent possible cross contamination from ingress of surface water down the side of the well). A watertight, trafficable, bolt-down cover was concreted into place, flush with the ground surface. Drilling

[3] Laboratory method reference – TM61/PM15
[4] Laboratory method reference – TM61/PM62

locations without monitoring installations were backfilled and reinstated at surface (refer to BH log installation details, **Appendix A**).

Shallow gas/groundwater monitoring wells were left for a minimum period of 48 hours before a peristaltic pump was used to develop the wells (remove silt from within the well and improve performance of the gravel filter pack). This typically involved purging ~20 litres from each well or in some cases purging until dry (wells with very slow recovery).

Deeper groundwater monitoring wells were left for a minimum period of 48 hours before a portable suction and/or inertial pump was used to develop the wells (remove silt from within the well and improve performance of the gravel filter pack). This typically involved the high flow purging of ~150 – 200 litres from each well.

Hydraulic Testing

Falling head tests to estimate hydraulic conductivity were performed in 4 wells. Displacement rods were used to create near instantaneous rises in water levels within the well. Pressure transducers installed at the base of the well measured the resultant recovery of water levels. Water level data was analysed using established empirical methods to provide estimates of localised hydraulic conductivity of the sand and gravel aquifer. Results are summarised in **Appendix C.**

Surveying

Topographic surveys to determine the position and elevation relative to UK Ordnance Datum of all investigation and monitoring well locations were undertaken by SVS supervised by Geosyntec. The position and elevation of the River Crane (as it passes beneath the Grand Union Canal) was also surveyed, as well as a reference elevation point for the measurement of canal water level adjacent to the sites northern boundary (close to BH2; refer to Figure 3).

1.4.3 Task 3 – Groundwater and Initial Gas Monitoring and Analysis

A groundwater elevation survey was completed prior to groundwater sampling. A dip meter was used to measure the depth to groundwater in each well (from the top of the well casing). These measurements were used to calculate groundwater elevations in metres above UK Ordnance Datum (mAOD).

Three rounds of groundwater sampling were conducted in December 2013, February 2014 and May 2014 (refer to **Table 2 –** groundwater sample inventory). Samples were collected via low flow (minimal purge/drawdown) techniques using a peristaltic pump. Field measurements of pH, specific electrical conductivity, reduction/oxidation potential (ORP), temperature and dissolved oxygen (DO) were recorded using a multi-parameter meter using an in-line anaerobic flow through cell. Upon relative stabilisation of these parameters representative groundwater samples were collected in laboratory supplied bottles. For trace metal/metalloid analysis, samples were filtered on site (0.45micron filters) and decanted into bottles with acid preservatives supplied by the laboratory. All samples were assigned a unique identifier, recorded via chain of custody forms, and refrigerated before being shipped to the sub-contract laboratory in cool boxes with ice packs.

One duplicate groundwater sample was taken during each of the December 2013, February 2014 and May 2014 groundwater monitoring events for quality assurance purposes.

Groundwater samples were analysed by Jones Environmental Laboratory (a UKAS accredited laboratory). Groundwater laboratory analysis certificates are provided in **Appendix D**.

1.4.4 Task 4 – Data Assessment and Reporting

Assessment of all intrusive investigation findings and analytical results has culminated in the production of this Phase 2 report.

2 SITE ENVIRONMENTAL SETTING

2.1 Site & Surrounding Land Use

The location of the Nestlé Hayes site (National Grid Reference 510100 179190) is illustrated in **Figure 1.** The site is just over 12 hectares in size. The M4 motorway is approximately 1km to the south of the site (closest to Junction 3). The northern end of the Heathrow airport complex is located about 2km to the south of the site.

The site entrance is located off North Hyde Gardens which is a road that marks the eastern boundary of the site. The site is bounded by Nestles Avenue to the south, the Grand Union canal to the north, a railway line to the northwest and a small industrial estate to the west. There is industrial land use to the north, east and immediately west of the site.

Hayes town centre is approximately 1km to the north. There is a large residential community immediately south of the site on the opposite side of Nestles Avenue. The small industrial units west of the site included some light engineering and garage related activities.

The topography of the area is generally flat lying between 25-30 mAOD. The River Crane is located approximately 200m east of the site. This flows north to south and ultimately discharges to the River Thames located around 10km to the southwest. The site does not appear to be at risk of flooding from the local watercourse.

The site and areas immediately northeast of the site beyond the canal and to the east beyond the main road (A312) are designated as areas of historic landfilling (Envirocheck report data). The landfill immediately northeast was licensed to the London Borough of Ealing for inert, commercial and household waste (last waste input date 1936). The site to the east was for inert, industrial, commercial, household and special waste (last waste input date 1949; license holder not supplied).

The main factory buildings occupy the majority of the site area with loading and parking areas along the eastern and south-eastern side and the limited external raw materials and waste storage areas at the north to north-western end of the site. In summary the following main buildings are present on-site (refer to **Figure 2**):

- Main Building – former roasting and drying plants (former chocolate factory);

- NW corner of Main Building – Boiler House & CGCP (Coffee Grounds Combustion Plant);
- Green Bean Warehouse;
- Eden Building (filling and packaging);
- Roaster & R Plant buildings;
- Out Of Home (OOH) Building;
- Former Amenities Building;
- Amenities Building; and
- Security Gate House.

2.2 Regional Geological, Hydrogeological & Hydrological Setting

Preliminary understanding of the wider regional geological, hydrogeological and hydrological setting, derived from our Phase I assessment is presented below.

Regional Geology

Geological information for the site and its surrounds, gathered by reference to the geological map for the area (BGS Solid & Drift Sheet 269), coupled with Envirocheck summary information, indicated that the site was likely to be underlain by the following sequence of strata:

- **Made Ground:** The artificial ground and landslip plan suggested the site was underlain by what is termed Worked Ground (areas where the ground has been cut away such as road cuttings). There was the potential for a degree of cut and fill to have been required to produce the elevation levels observed at the site. The origin and composition of any imported material that was used during the original phases of development of the site, if such fill was needed, is unknown;
- **Superficial Geology:** The site area is underlain by sand and gravel deposits (Lynch Hill Gravel Member). Further north, south, and immediately east of the site (a small area only), extending to and beyond the River Crane, deposits comprise silt and clay (Langley Silt Member). The Taplow Gravel Formation is located further to the south of the site; and
- **Bedrock:** Superficial deposits beneath the site are underlain by the London Clay Formation, a clay dominated sequence of clay, silt and sometimes sand of Eocene age. The London Clay is classified as unproductive. Chalk (bedrock) is expected at depth below the London Clay.

The site does not lie within a Groundwater Source Protection Zone (SPZ) for potable water supplies, however the Environment Agency have defined the site as being underlain by a Principal Aquifer comprising all sand and gravel units in the area. Whilst the sand and gravels are relatively thin and shallow they are laterally extensive, highly permeable and

certainly capable of supporting small to medium sized abstractions, as well as providing base flow to surface waters such as the River Crane and the River Thames.

Water quality in the River Crane was classified as category "D", (Fair) in 2000 (Envirocheck data). Due to the sand and gravel aquifer being relatively close to the surface it is classified as having high groundwater vulnerability over a wide area, including beneath the site (i.e., vulnerable to pollution).

The site has two abstraction wells, one in use and the second never commissioned (reported to have had insufficient water). The operational abstraction well is located centrally at the northern end of the main building (indicated on **Figure 2**). The Environment Agency (EA) lists two licensed water abstractions for the Nestlé site. These were reported to be for two water uses: boiler feed and evaporative cooling. The abstraction rate is understood to be fairly constant in the order of ~35-40 m^3/hour.

There is also reported to be two other licenced groundwater abstractions relatively close to the site (600-700m distant, one to the west and one to the east), again indicated to be used for boiler feed or cooling purposes.

The next sections detail site specific findings of the Phase 2 intrusive investigations.

2.3 Site Specific Geological Setting

The general sequence of deposits encountered beneath the site during Phase 2 site investigations is illustrated schematically by **Figure 4** (idealised geological cross section produced using BH-series data) and described below.

2.3.1 Made Ground

The site is predominantly surfaced with reinforced concrete generally 0.1 – 0.4 m thick. The site area adjacent to the Grand Union canal (northern site boundary) has been the subject of extensive soil excavation and replacement works, following the identification and remediation of fuel contamination which at one time impacted the canal (main incident in the late 1990s). In isolated areas along the northern site boundary (vicinity of BH1 and BH2) two layers of concrete were found extending to observed depths of 0.8 mbgl. Within the CGCP building >1.8 m of reinforced concrete was found (WS31), the extent of which is believed to be localised (not encountered in nearby WS29, WS30, WS32 or WS33).

Un-surfaced landscaped areas are confined to the south and south west of the site (around the former amenities building (including the bowling green and tennis courts) and south of the main office building), with a thin grass covered verge along much of the eastern site boundary.

Made Ground was encountered below the concrete and thin sub-base layer in the majority of locations (except WS31 and BH3). In the majority of cases thicknesses of concrete and underlying Made Ground materials generally extended to depths of between 0.5-1.0m, with a maximum observed thickness of 1.8m. Made Ground consisted predominantly of building rubble type materials (concrete and brick) in upper sections, becoming clayey with depth, likely associated with reworking/incorporation of underlying superficial deposits. Slag type

materials were encountered in discrete areas along the northern site boundary (WS11, 21, 23 and BH9), as well as in the south eastern corner of the site (BH4, BH5 and WS28).

2.3.2 Superficial Geology

Undisturbed natural superficial deposits were proven in 30 locations (refer to **Appendix A** borehole logs). The general sequence of superficial deposits was as follows:

Made Ground was underlain by deposits of clayey gravel/gravelly clay (likely glacial deposits). These deposits appear to extend laterally beneath the majority of the site. Thin peaty silt deposits overlay glacial deposits locally.

Glacial deposits were underlain by sand and gravels, believed to be of the Lynch Hill Gravel Member (River Thames Terrace Gravels). Sand and gravel deposits (between 1 – 4 m thick) appear to extend laterally beneath the entire site. Discrete (possibly contiguous) 0.2 – 0.3m thick sand lenses were observed within the sand and gravel.

London Clay bedrock (firm-stiff brown/grey clay) was proven in all 9 deeper borehole locations (BH1-9). The London Clay can be expected to extend laterally beneath the entire site and area as a whole. Drilling penetrated to a maximum depth of 1.2m into the London Clay (BH6). The London Clay is expected to be in the order of 60m thick beneath the site (as inferred from the site abstraction well borehole log).

2.4 Site Specific Hydrogeological/Hydrological Setting

Figure 5a illustrates all groundwater level measurements (corrected to mAOD) collected during the Phase 2B monitoring round in February 2014. These include shallow and deeper monitoring well data so cannot be directly used to consider groundwater flow direction. **Figure 5b** uses data from select deeper monitoring wells which are predominantly screened in the River Terrace Gravel deposits (the main groundwater flow zone) and this dataset has been used to assess groundwater flow direction in this unit.

The shallow groundwater flow regime within this aquifer unit has been estimated using triangulation to be to the southeast with a hydraulic gradient of the order of 0.0075 (1.5m head decline in about 200m distance). Groundwater flow as illustrated in **Figure 5b** is in line with natural drainage in the local area, towards the River Crane which is to the east and south east and flows south towards the River Thames. The water level in the River Crane, measured in February 2014 (refer to Figure 5A), from the canal bridge to the east of the subject site, was about 24.5 mAOD. This is some 3.5-4m lower than groundwater levels within the sand and gravel aquifer beneath the eastern end of the subject site. This highlights a probable hydraulic connection and a steepening gradient to the River Crane. Between the site boundary and the river the gradient may be as high as about 4:200 or 1:50 (0.02).

Groundwater within the sand and gravel aquifer (Lynch Hill Gravel Member) appears to be confined to semi-confined beneath a significant part of the site, by the overlying clayey gravel/gravelly clay deposits. Shallow groundwater/ground gas monitoring wells (partially screened in Made Ground above clayey gravel/gravelly clay deposits) suggest there is locally some perched groundwater above the sand and gravel aquifer.

Estimates of Sand and Gravel aquifer hydraulic conductivity (K) ranged from 12.5 – 33.1 m/day, derived from 4 variable head tests undertaken in BH's 3, 5, 7 and 9. All hydraulic conductivity estimates derived from on-site well slug testing are tabulated in **Appendix D**.

Repeated groundwater elevations measured in BH9 suggest a localised depression of the water table. Groundwater elevations in BH9 were ~2.0m lower than in BH8 (60m away) during both November 2013 and February 2014 monitoring. At 28.74 mAOD in February it was 0.74m lower than the canal level measured in March 2014 (29.48 mAOD; also shown on Figure 5A). This apparent localised water table depression is inferred to cause a localised reversal in groundwater flow direction (to the northwest). This is unusual and may be erroneous. It may be associated with hydraulic connection of the sand and gravel aquifer here with a local deeper service trench or drain. This would have to be directed under the canal.

3 SITE INVESTIGATION RESULTS, DISCUSSION AND PRELIMINARY RISK ASSESSMENT

3.1 General Introduction

During both the Phase 2A and Phase 2B intrusive investigations boreholes were drilled and logged and soil samples were collected for field testing and laboratory analysis. Further, during both phases of investigation select boreholes were converted to temporary groundwater or ground gas sampling installations by the design and installation of monitoring wells. Rather than split out results and discussion, on the basis of timing (Phase 2A or 2B), the sections below integrates all the sampling point data in relation to field observations, soil, ground gas and groundwater results.

3.2 Field Observations of Contamination

Observations of contamination and field head-space analysis (HSA) results are recorded on the borehole logs included in **Appendix A.** A summary of the field observations and HSA results is provided below:-

- Black soil staining and/or residual tar like hydrocarbon coatings combined with associated hydrocarbon (oil type) odours was encountered in 9 locations, restricted to the northern site boundary area (BH1, BH9,WS16, WS18, WS20, WS21, WS23, WS24 and WS30). Observed residual hydrocarbon impacts are inferred to be as a result of historic losses to ground of fuel hydrocarbons from bulk tank storage along the northern (canal) site boundary, and preferential migration along drainage routes. **Figure 6** is designed to help illustrate these visual observations. Such losses and lateral migration is believed to have ceased in the late 1990s, a point of time when there was a substantial egress to the canal and corrective action and infrastructure up-grades were undertaken on-site;
- Slag material was noted within Made Ground in discrete areas along the northern site boundary (WS11, 21, 23 and BH9), and in three locations within the south eastern corner of the site (WS28, BH4 and BH5);

- No visible asbestos containing materials or fibres were encountered during excavations, although it is noted that some samples did contain asbestos containing materials (ACM), detected during laboratory screening of samples (Section 3.3.1);
- Head Space Analysis (HSA) of soil sub-samples from BH1-9 identified one volatile organic compound relative hot spot (>50 ppm isobutylene equivalents) at 1.3 – 1.4 mbgl in BH9 within the hydrocarbon stained soils. All other HSA measurements ranged between 0.0 – 9.1 ppm. HSA of the sand and gravel aquifer material typically measured between 5.0 – 7.0 ppm;
- HSA of soil sub samples from WS1-36 reported detections of <1.0 ppm within Made Ground for the majority of locations, with isolated detections up to 60ppm mostly associated with discrete hydrocarbon odours and black hydrocarbon staining (WS20, 23, 28, and 30). **Figure 6** summarises soil HAS results along with visual and olfactory indications; and
- HSA readings from natural deposits (generally 1.2 – 2.0 mbgl[5]) in WS2, 3, 4, 12, 21, 22, 24, 25, 28 and WS36 measured between 20 – 70 ppm. These results may have been affected by sensitization of the PID instrument during drilling works, as soil observations showed no visual or olfactory evidence of contamination. Subsequent VOC analysis of soil samples from some of these locations reported concentrations below laboratory method detection limits.

During the collection of groundwater samples hydrochemical parameters were recorded. Field hydrochemical data is included in Table 4 and can be summarised as follows:-

- Groundwater pH was mostly near neutral ranging between pH6.75–7.85, with the exception of alkaline pH ranging from pH8.47–9.87 in four monitoring wells (BH1, BH2, BH8 and WS22). All these 4 monitoring wells are close to the northern end of the main production building and the relatively high pH suggests a site source of alkali (site bulk storage and use of sodium hydroxide in this northern area; also possibly associated with presence of thick and relatively new concrete hard standing);
- Specific electrical conductivity measurements were variable, typically ranging from 0.4-1.7 mS/cm, with a maximum conductivity of 2.5 mS/cm measured in BH8 in December 2014. Higher electrical conductivities in groundwater can suggest anthropogenic inputs. BH8 is located within the Caustic materials delivery/transfer area. The combination of alkaline pH and high conductivity may also be indicative of caustic related impacts to groundwater quality, specifically in the vicinity of BH8, although it is noted that the February 2014 result for BH8 was down to 1.23 mS/cm and 1.7 mS/cm in May 2014;

[5] mbgl = metres below ground level

- Dissolved Oxygen (DO) readings were lower in February 2014 (0.1-0.5 mg/l)[6] compared with December 2013 (0.5 – 1.9 mg/l). ORP was also reducing in all deeper groundwater boreholes sampled during February 2014, in contrast to marginally reducing to oxidizing conditions recorded in December and May 2014. These conditions are likely to reflect a combination of (i) the sand and gravel aquifer is typically semi-confined to confined whereby local recharge is limited and (ii) the regional urban setting which also influences recharge and recharge quality.

3.3 Laboratory Chemical Analysis Results - Soil Samples

A total of 49 soil samples were scheduled for laboratory analysis (refer to **Table 1** soil sample inventory). Laboratory analysis certificates are included as **Appendix B**. The complete data set in **Appendix B** has been screened against human health Generic Assessment Criteria (GACs) for the following potential land uses: (i) Residential with plant uptake; (ii) Residential without plant uptake and (iii) commercial (refer to **Tables 6A**, **6B** and **6C**, respectively). The main laboratory analysis results for site soils can be summarised as follows.

3.3.1 Shallow soil samples

This section focuses on laboratory results for soil samples collected in the approximately upper 1m of the soil profile, most relevant when considering potential risk to human health due to possible future changes in site use. Samples typically comprise Made Ground or the uppermost section of the natural subsoil profile. A total of 33 shallow soil samples (from depth of ≤1m) have been analysed.

Results for shallow soils sampled from beneath the site are now presented by contaminant group as follows (also refer to **Table 6(A-C)** and **Figures 7 - 10**):

Total & Speciated Petroleum Hydrocarbons including Poly Aromatic Hydrocarbons (PAHs)

- Visual/olfactory evidence of hydrocarbon impact and/or residual product was noted in WS16, 18, 20, 21, 23, 24, 30, BH1 and BH9 (refer to **Figure 6)**. 17 shallow soil samples were analysed for speciated petroleum hydrocarbons (TPH-CWG) and a further two for general TPH analysis (EPH);
- In the case of total petroleum hydrocarbons (TPH) only 6 samples reported TPH-CWG results totaling >50 mg/kg (refer to **Figure 7**). These were all close to or along the northern boundary, including the old and new boiler houses and the diesel fuel bulk storage. One shallow sample was analysed using the more general EPH analysis and reported 198 mg/kg TPH (BH5 in the southeast area). The distribution of higher petroleum hydrocarbon contaminated soils in this area is consistent with that for PAHs;
- Only one reported TPH-CWG concentration was above 1,000 mg/kg (~17,000 mg/kg in a 0.4-0.5m deep sample from WS18 within the footprint of the former boiler

[6] The isolated high DO concentration in WS22 (5 mg/l, February 2014) may reflect recent surface water recharge to this inferred perched groundwater body

house). The TPH comprised more aromatic (~10,000 mg/kg) than aliphatic hydrocarbons, predominantly >C12 carbon chain lengths and the majority >C21. This is indicative of the presence of mainly heavy fuel or lubricating/machine oil. It is noted that the reported ∑PAH concentration in the WS18 sample was only around 400 mg/kg (16 cogeners);

- With respect to PAHs, reported total PAH[7] concentrations were generally greater than the limit of detection (LOD). For shallow soils samples (<1m depth) 17 samples reported >1 mg/kg ∑PAHs, and these detections were quite widely distributed across the site (**Figure 8**). Typically a wide range of individual PAH compounds were reported;
- 20 samples with significant detections of one or more individual PAH compound exceeding saturation limit for specified soil type. These detections are widely distributed across the site;
- 8 samples recorded >10 mg/kg ∑PAHs , with 3 of these samples (WS18, WS28 and WS30) in the 100's to low 1,000's mg/kg ∑PAHs range (peak of2,001 mg/kg). These higher concentrations were reported for soils collected in and around the old and new boiler rooms, including the former HFO tanks and the boundary with the Grand Union canal, but also the southeast area of the site, plus one location on the south side of the OOH Building;
- The peak 2,001 mg/kg ∑PAH concentration reported in WS28 was from Made Ground containing some slag material (and hydrocarbon odour); Whilst this sample was not analysed for petroleum hydrocarbons it would be expected to contain a high TPH concentration;
- When compared to GAC values as part of a preliminary risk assessment the following are noted:
    - For possible <u>commercial end-use</u> the only shallow samples collected that had petroleum hydrocarbon, including PAH results, that exceeded respective GACs were WS18, WS28 and WS30. Of these only WS28 had multiple exceedances for a number of PAHs (and potentially TPH fractions if it had been analysed). For the other 2 sample results these were only >GAC (Commercial) for the individual PAH benzo(a)pyrene which is often highlighted as a risk driver in the preliminary stages of risk assessment;
    - For possible <u>residential end use</u>, assuming houses with gardens at this stage (with and without home grown produce), in addition to the samples from WS18, WS28 and WS30, another 5 samples fail one or more GAC values in the case of residential (no produce), namely WS1, WS4, WS20, WS24 and WS32, totaling 8 samples. For residential with home grown produce GACs one further shallow soil sample exceeds one or more GAC for this end use (BH5

[7] USEPA 16 cogeners, includes naphthalene. Symbol ∑ used for Total (i.e. ∑PAHs = Total PAHs)

sample from 0.9m), totaling 9 samples. These are associated with the highest reported concentrations close to boiler house, the northern boundary and the southeast corner area, plus one location on the south of OOM Building;

- It is further noted that WS18, WS23, BH1 and BH9 have TPH Hazard Quotients >1 (noting BH9 and WS23 samples did not report any individual TPH components > GAC). This means that overall the broad suite of hydrocarbon contamination is a potential problem even though in some cases No individual GACs have been exceeded; and
- It is noted that whilst some TPH results are probably closely aligned with PAH findings, the contamination linked to hydrocarbon losses, in some cases the source of PAHs may be predominantly ash (coal ash) within the Made Ground, with limited hydrocarbon component (little or no hydrocarbon impact (visual or olfactory) identified in samples[8].

Poly Chlorinated Biphenyl (PCBs)

Three (3) shallow soil samples were collected specifically from the footprint of the former boiler plant building (boreholes WS16-18) and analysed for a suite of 7 PCB compounds. None were reported above the Limit of Detection (LOD). In the case of the WS18 sample the LOD was two orders of magnitude higher than normal due to the high level of hydrocarbon contamination in this sample. For the other two samples the LOD was 0.005 mg/kg for individual PCBs.

Volatile Organic Compounds (VOCs)

In the case of potential VOC soil contamination, for human health related considerations, all soil data above the water table has been considered relevant and not just samples from the upper metre. This is because of possible vapour phase pathways maybe plausible from greater than 1 metre below ground level. A standard suite of 60 volatile organic compounds (VOCs) have been assessed as part of the laboratory analysis programme. In total 31 soil samples (all depths) have been collected for laboratory analysis. Results can be summarised as follows:

- In most cases no VOCs were detected in the samples collected. Of the 31 samples analysed there were only 12 reported detections of one or more VOCs;
- Of the above twelve samples 6 were reported to contain only 1 individual VOC, typically toluene (reported for 5 samples in the concentration range 0.005-0.057 mg/kg) and in one case tetrachloroethene (PCE) at a concentration of 0.01 mg/kg. These are all considered trace concentrations;
- BH5 reported trace levels of both toluene (0.043 mg/kg) and xylenes (0.009 mg/kg), two related aromatic compounds found in petrol and some cleaning solvents

[8] PAH analytical detections in WS3 and WS32. No PAH analysis on WS14 sample.

- The remaining 5 samples reported a number of individual VOCs (between 3-7 compounds), all aromatic in character, including methyl-, butyl- and propyl- aromatic compounds. All are associated with light end fuels such as petrol. All are reported at low concentrations. The maximum total VOC concentration reported was about 1 mg/kg (BH1 sample from 0.9-1.0m depth);

None of the 31 samples collected and analysed reported VOC concentrations above respective Commercial or Residential GACs.

Trace Metals & Metalloids (excluding mercury)

Of the suite of nine (9) trace metals and metalloids assessed only 4 have been reported at concentrations greater than respective GAC criteria. These were, in order of sample detections, Mercury (Hg) (discussed separately in the following section) arsenic (As), lead (Pb) and chromium 6 (Cr^{6+}). The distribution of reported shallow (upper 1m) soil sample trace metal and metalloid contamination (excluding mercury) can be summarised as follows, noting that a total of 30 shallow (<1m depth) soil samples were collected for laboratory analysis:

- In the case of As 4 samples contained relatively elevated levels. Three were close to the area of the hazardous waste and chemical storage compounds and the east end of the contractor's area adjacent to this (WS9, WS10 and WS12). These samples reported As concentrations in a range between 37-80 mg/kg. The 4th sample with similarly elevated As was from WS29 (in the existing boiler house) where 36 mg/kg was reported;
- Soil Pb levels were reported to be relatively elevated in WS10 (hazardous chemical storage) and WS24 (northern boundary near the northeast corner). The latter had some PAH/hydrocarbon contamination also; and
- Finally chromium (specifically Cr^{6+}; the hazardous form) was reported at 14 mg/kg in WS13 only (beside the diesel tank farm) in close proximity to WS9-12 where arsenic was reported.

In the case of potential future commercial end use only one sample reported concentrations of one or more trace metals and metalloids >GAC. This was WS25 due to 766 mg/kg lead which marginally exceeded the GAC of 750 mg/kg (Refer to **Figure 9**).

In the case of potential residential end use of the site the presence of somewhat elevated trace metals and metalloids appears to be mainly associated with the northern boundary area (refer to **Tables 6a and 6b**) including in and around the boiler house footprints. There is one potential exception to this and that is the more widespread presence of typically low levels of mercury, which has also been reported more broadly, including in soils beneath the southern half of the site and is discussed in more detail below.

Mercury

Widespread occurrences of positive analysis results for total mercury were obtained for soil samples collected at the site in December 2013 and February 2014 (**Tables 6A-C**). The

distribution of reported shallow (upper 1m) soil samples mercury contamination can be summarized as follows:

- The highest reported mercury concentrations in shallow soil samples were from boreholes drilled relatively close to the existing boiler house (3-47 mg/kg Hg with the peak in a 0.7-0.8 m depth sample from WS19 between the boiler house and the former HFO tank farm);
- Other sample locations where mercury was somewhat elevated were WS10-13 (close to the diesel tank bund and adjacent hazardous storage areas), the northern site boundary area generally (BH1, WS21 and WS24), but also more generally in the southeast (BH5 and WS1) and southwest (WS3-4) site areas, noting 16 mg/kg was reported in WS1 close to where a garage facility was historically located.

Mercury contamination was first identified at the site when enabling work involving excavation of Made Ground and soils was completed for the Coffee Grounds Combustion Plant (CGCP) on the south side of the existing boiler house in the early 1990s. It was reported that small amounts of elemental mercury (Hg) was found in some of the excavated soils. This was linked to the former use of mercury switches in the boiler house (outlet damper controls and boiler pressure controls), which were a relatively fragile design and did break. Such breakages could release a small bubble of mercury and because it is so dense mercury tends to find its way into the subsurface through cracks and poor integrity areas of hard standing, floor ducts and drains. This is believed to be the only source that can be linked to site operations and therefore the amount of mercury in the ground can be expected to be limited (as indicated by the typical concentrations reported).

Four (4) of the 5 highest reported Hg concentrations, in the range 8-47 mg/kg Hg were from soils collected relatively close to the existing boiler house. Access was limited in this area so the area of contamination is not yet well defined. However this area of the site with relatively elevated Hg also has other forms of shallow soil contamination (hydrocarbon related) and as such a remedial plan for the area generally may be needed if there is to be a change of land use.

The 5th shallow soil sample with relatively elevated mercury (16 mg/kg) was WS1 located in the southeast area of the site close to where a garage was historically located. Further, as stated above, somewhat lower level soil Hg is reported more generally (WS3 and WS4; BH5 and WS24). This may reflect more widespread historic use of mercury switches on-site, the possible presence of elevated mercury within the Made Ground that was imported to create the development platform upon which the site has been constructed or possible drainage related migration of released elemental Hg to other areas of the site from the boiler house area. It would be prudent to make an assessment of these possible causes of the distribution of Hg in soil at the site.

To assess whether the mercury at the site is present in the organic or inorganic form (each of which presents a different level of risk), speciated analysis for mercury in soil was carried out in May this year on selected soil samples that had been retained at the laboratory from the earlier phases of investigation.

Table 6d summaries soil mercury results for samples originally analysed in February and subjected to speciated analysis in May 2014 to allow assessment of elemental mercury (not just total mercury) content. It can be seen from data in this table that the May results for total mercury were broadly consistent with the original analysis results in February (for 10 samples within a factor of 2). However, all 16 samples analysed for elemental mercury reported only trace levels in this form, in the range of <0.00002-0.0047 mg/kg, when compared to the total mercury levels of <0.5-21.6 mg/kg in the June repeat analysis programme.

The percentage (%) elemental mercury, in these samples ranged from 0.000001% (WS19) to a maximum of 7.1% (WS3)[9]. Only 5 of the 16 samples reported elemental mercury content at >1% of total mercury. These were samples from WS3 (7.1%), WS4 (3.5%), WS12 (1.5%), WS28 (2.9%) and WS36 (4.2%). The highest total mercury results are not always associated with the more elevated (albeit trace) levels of elemental mercury. Most notably, the WS19 22-47 mg/kg total mercury result (the highest recorded) contained <0.00002 mg/kg elemental mercury.

Figure 10 illustrates the distribution of speciated mercury analysis results. It demonstrates that none of the soil elemental mercury results are above the respective GAC of 0.17 mg/kg (residential with plant uptake) or 18.4 mg/kg (commercial). In addition, total mercury results (including both organic and inorganic forms) are also below the inorganic mercury GAC's of 238 mg/kg and 3,600 mg/kg for both residential with plant uptake and commercial development scenarios.

Soluble Sulphate

15 soil samples were analysed for soluble sulphate, for two of which no determination was possible. The 13 sample results ranged from <1.5 mg/l to a maximum of approximately 200 mg/l (WS32). Of the total 13 samples, 4 samples reported >100 mg/l soluble sulphate (WS1, WS19, WS23 and WS33). This appears in-line with groundwater sample results for sulphate which were in the typical range 50-110 mg/l, with one significantly higher groundwater sample result reported for BH4 (403 mg/l sulphate). BH4 was installed later and contained a lot of concrete down to 1.5m and this may have influenced the result.

Asbestos Containing Material (ACM)

A total of 39 soil samples were screened for the presence of asbestos. Six samples reported quantifiable amounts of asbestos and were subsequently scheduled for asbestos quantification analysis. The table below summarises asbestos detections across the site:

[9] Using LOD values when the sample result was <LOD.

Asbestos Quantification Analysis: Summary of Results

Sample Location	Sample Depth (m)	Mass %	Type & Source Material
WS18	0.4 – 0.5	0.002	Amosite/Chrysotile within insulation debris (non-fibrous)
WS20	0.6 – 0.7	0.001	Chrysotile (free fibres)
WS21	0.7 – 0.8	<0.001	Chrysotile (free fibres)
WS29	0.7 – 0.8	0.001	Chrysotile (free fibres)
WS30	0.6 – 0.7	<0.001	Amosite/Chrysotile (free fibres)
BH5	0.9	0.003	Chrysotile in asbestos containing cement fragment

It can be seen from the above results that 4 samples were reported to contain asbestos fibres and the other 2 samples solid or non-fibrous asbestos containing material (ACM). The presence of asbestos fibres in soils is something that would need to be managed as part of any proposed site development. The 4 samples reporting some fibres (in all cases ≤0.001% by mass of sample) were collected from the area around or close to the boiler house footprints where other soil contamination has been identified (mainly hydrocarbon related). Use of ACM is known to have been quite widespread at the site and a separate investigation programme has been completed to quantify its presence.

3.3.2 Deeper soil samples

This section focuses on laboratory results for soil samples collected below 1m depth, less relevant when considering potential risk to human health due to potential changes in site use, but potentially relevant to potential impact on shallow groundwater due to leaching. A total of 12 deeper soil samples (1.0 – 3.6mbgl) were sent for laboratory chemical analysis (for one or more contaminants of potential concern or contaminant suites).

As may be expected deeper soils beneath the site were typically found to be a lot less impacted by contamination than samples collected from the upper metre of the soil profile (refer to the **Table 6** series of tables). This will in part reflect more natural subsoils (as opposed to Made Ground). Results can be summarized as follows:

- Mercury (Hg) was reported at concentrations above residential GAC for elemental Hg in 4 of 6 samples analysed, in the concentration range 0.2-4.2 mg/kg. The highest concentration was in BH8 (2.1 mg/kg) and BH9 (4.2 mg/kg), at depths of 1.85-1.9m and 1.2-1.3m, respectively. The BH8 sample was from clayey gravel below the Made Ground. The BH9 sample was of Made Ground which was impacted with hydrocarbons. Both are in relatively close proximity to the former and existing boiler house footprints; and
- TPH in BH9 - Hazard Quotient marginally >1 at 1.12. BH9 sample from 1.2 -1.3mbgl and was reported to contain 218 mg/kg aromatic and 509 mg/kg aliphatic hydrocarbons. Deeper visual/olfactory reported no evidence of hydrocarbon impact below 1.45mbgl in this borehole.

3.4 Other Soil Analysis

A total of 14 shallow soil samples (<1.0 m, WS series) were analysed for FOC, with an average calculated SOM concentration of 1.03%. Four (4) samples of the main shallow aquifer zone (sand and gravel) were collected at depths of 3-4m. Results were all <0.001 (<0.1%) for these samples from BH3, BH6, BH8 and BH9.

3.5 Laboratory Results - Groundwater Samples

Three rounds of groundwater sampling were undertaken in December 2013, February 2014 and May 2014 (refer to **Figure 11**). The deeper monitoring wells (BH1-9) were designed to be screened in the main sand and gravel shallow aquifer zone. Conversely the shallow monitoring installations are designed to allow monitoring/sampling of both shallow groundwater and soil gas and were screened across Made Ground and sometimes into the uppermost glacial/alluvial deposits. In addition to these especially installed monitoring wells, the operational on-site deep (Chalk aquifer) well was available to sample. Groundwater analysis results can be summarised as follows:

3.5.1 Deeper sand & Gravel Aquifer Groundwater (BH1-9)

In December 2013 groundwater monitoring was completed from BH1-3 and BH5-9. Some of these locations were repeat sampled in February 2014 with BH4 (newly installed) being also added to the inventory. The May 2014 groundwater monitoring round included BH1-9 inclusive. The main results can be summarized as follows:-

- In December 2013, BH1 reported relatively elevated mercury (3 µg/l), arsenic (15 µg/l) and nickel (44 µg/l) concentrations. The blind duplicate also collected gave consistent results. BH1 was consequently repeat sampled in February 2014 and reported 6.8 µg/l mercury, 21 µg/l arsenic and 18 µg/l nickel. Perhaps more significantly mercury analysis was rerun using a more sensitive and lower detection technique and this gave a result of about 41 µg/l mercury. In May 2014 mercury remained elevated at 31.1 µg/l, relatively consistent with the February result.
- Groundwater boron was consistently quite elevated (100-500 µg/l) but not at a level that would be of potential concern;
- BH2 groundwater reported 50 µg/l hexavalent chromium (Cr^{6+}) in December 2013, but when repeated in February and May 2014, the level was below the limit of detection (LOD 30 µg/l). Total chromium was <1.5-2 µg/l in all three cases resulting the hexavalent chromium result in December appearing to have been erroneous;
- One sample from BH2 contained total ∑PAHs of approximately 30 µg/l, mainly comprising naphthalene (20.4 µg/l). BH2 is located close to the northern boundary within a defined area of shallow soil hydrocarbon contamination. Close by WS28 soil contained relatively elevated ∑PAHs (26.9 mg/kg). BH2 was re-sampled in February and May 2014 and reported ∑PAHs of 1.6 µg/l and 3.27 µg/l, respectively. These latter two samples are considered to be more representative because it allowed 3-6 months for the monitoring well to equilibrate (with groundwater) post drilling and installation.

- Two other groundwater samples reported detectable PAH's, 2.5 µg/l in BH1 and 0.26 µg/l in BH6. In both cases there has been reported to be soil contamination by PAHs locally and by association groundwater impact could be expected. BH1 is in the same northern boundary area of soil hydrocarbon contamination as BH2. In the case of BH6 some 14.1 mg/kg ∑PAHs was reported in WS1 soils just north of this well.
- In February 2014 ∑PAHs in BH1 was 7.2 µg/l, mainly comprising naphthalene, acenaphthene and fluorene. In this monitoring round lower levels of ∑PAHs were reported in BH4, BH8 and BH9 (in the range 0.7-1.4 µg/l). In the case of BH8 groundwater naphthalene was a key component but for the other two samples this was not the case;
- In May 2014 the ∑PAHs concentration in BH1 was 12.4 µg/l, with naphthalene contributing ~50% to the speciated PAH composition. Compared to the earlier two monitoring rounds, PAH and naphthalene concentrations show an increasing trend in this location, although concentrations in monitoring wells down hydraulic gradient from BH1 indicate low to non-detect levels.
- Groundwater sampled from BH5 (closest to the soil borehole with the highest ∑PAH result) and BH8 (in the heart of the boiler house hydrocarbon contamination area) did not reported detectable PAHs (<LOD). In the case of BH5 this <LOD result was repeated in February and May 2014 when re-sampled;
- Total Petroleum Hydrocarbons (TPH) was not detected in any groundwater sample collected in December 2013. Analysis included aromatic and aliphatic compound group distinctions and 7 carbon band ranges. In February 2014 six wells were sampled and again no detections reported; and
- The only detection of any volatile organic compounds (VOCs) was 0.5 µg/l toluene in BH2. No other VOCs were reported in any groundwater sample in December 2013. Repeat sampling and analysis in February 2014 on 5 BH-series wells, plus BH4, confirmed the absence of VOCs in groundwater sampled from wells installed in the sand and gravel aquifer (noting toluene was not detected in BH2 on this occasion).

Groundwater samples collected from the main shallow groundwater flow zone (represented by BH1-9 data), the River Terrace sand and gravel which is classified as a Principal Aquifer, is usefully compared with Generic Assessment Criteria (GACs), in this case Drinking Water Standards (DWSs) or possibly Environmental Quality Standards (EQSs). This has been done for all groundwater data in **Table 7 and Figure 11**. Findings can be summarised as follows:

Trace Metals & Metalloids

- The December 2013 sample data for BH1 exceeded DWS for arsenic (15.6 µg/l compared to DWS of 10 µg/l), nickel (43-44 µg/l compared to DWS of 20 µg/l) and mercury (3 µg/l compared to DWS of 1 µg/l). In the December 2013 round no other groundwater sample result exceeded the respective DWS criteria (the 50 µg/l Cr6+ result for BH2 is considered erroneous, as outlined above);

- For February 2014 samples there were two trace metal and/or metalloid DWS exceedences, both linked to BH1 groundwater. This was for mercury (41µg/l) which was a major exceedence and arsenic (21µg/l versus the 10µg/l DWS). Otherwise, no other groundwater sample result exceeded the respective DWS criteria in February 2014;
- The May 2014 sample analysis data for BH1 also exceeded the DWS for arsenic (30.28 µg/l compared to 10 µg/l DWS) and mercury (31.1 µg/l compared to 1 µg/l). In addition, the WS22 groundwater analysis results for arsenic (15.2 µg/l) and mercury (1.24 µg/l) also exceeded their respective DWS.
- No other sand and gravel installed well (BH-series well) had a DWS exceedance during the initial three rounds of groundwater sampling[10].

Poly Aromatic Hydrocarbons (PAHs)

For the BH-series wells, groundwater had some PAH exceedences of EQS and DWS criteria (highlighted green and blue respectively in **Table 7**) during each of the three monitoring rounds. The only DWS exceedences were for naphthalene in BH2 reported as 21.4 µg/l (Dec13), and in BH1 reported as 3.9 µg/l (Feb14) and 6 µg/l (May14) compared to a DWS of 2.4 µg/l.

In the absence of DWS criteria for most of the individual PAHs, EQS criteria was used to screen the speciated PAH results however these are considered to be conservative for this site given that potential groundwater discharge to surface water is expected to take place approximately 200m or more down hydraulic gradient. PAH exceedances of EQS are summarized below:

- Five (5) of the 8 groundwater samples collected in December 2013 had one or more PAH failures, when compared to respective EQS criteria. This was most pronounced for BH1 (3 PAH compounds) and BH2 (6 PAH compounds), the latter having by far the highest ∑PAH result in December at about 30 µg/l. The other 3 groundwater samples only reported one individual PAH compound exceedence;
- In February 2014, 5 of the 6 wells sampled contained PAH concentrations above the EQS criteria used. BH1 and BH2 groundwater samples report similar findings to the December results (3-5 compound exceedences; noting BH1 groundwater had the higher of the two ∑PAH concentrations reported in February). New well BH4 had 4 PAH exceedences, with BH8 having 2 and BH9 having 5 PAH compound exceedences. The BH9 groundwater >GAC result was new; the reported ∑PAH concentration was about 1.4 µg/l. BH9 was located immediately adjacent to the diesel bulk storage tank farm.
- In May 2014, 4 of the 9 wells sampled contained PAH concentrations above the EQS criteria used. These exceedances once again occurred within BH1 and BH2 with the same 3-5 speciated PAH's and BH1 once again recording the higher ∑PAH concentration. In comparison with the February results, all of the BH4 PAH exceedences where not repeated May 2014. Compared to February results, one additional minor exceedance was

[10] Other than sodium in BH7 and BH8 – not a risk driver.

reported in BH8. In BH9, only two PAH compounds exceeded EQS criteria compared with five in February, and the ∑PAH concentration reduced to 0.54µg/l (~61% reduction compared to February 2014).

Whilst there have been some exceedences of the specified groundwater GACs for certain contaminants of potential concern, these have not been widespread in shallow groundwater beneath the site. For the main groundwater flow path within the River Terrace sand and gravel aquifer, the key reported groundwater concentration of a trace metal or metalloid above respective Drinking Water Standard (DWS) was 21 µg/l arsenic and 41 µg/l mercury in BH1 in February 2013, with 31 µg/l arsenic and 30 µg/l mercury also reported in May 2014. This monitoring well previously reported exceedences for arsenic and mercury (albeit at lower concentrations) in December 2013, when nickel above DWS was also reported (44 µg/l).

The most critical result appears to be the up to 41 µg/l mercury significantly above the above the DWS of 1 µg/l. The reported BH1 concentration is similar to the solubility of elemental mercury which would indicate that some elemental mercury has entered the shallow aquifer system. Elemental mercury is very dense so when found in soils during the CGCP excavation, which in understood to have gone to a depth of between 1.5-2m (WS31 reported 1.8m concrete infill) it seems plausible that it could have migrated further downward and potentially into the shallow aquifer. This is because borehole logs for BH1 and BH8 highlight the depth to the top of the main sand and gravel aquifer was at 2.4-2.5m bgl, with clayey gravel above this in BH8.

BH1 is located in a relatively up-gradient location of the site near the boiler house and canal. Four monitoring wells which together are expected to represent groundwater that is down gradient of the BH1 areas (namely BH2-BH5) did not detect mercury and reported only trace levels of arsenic and nickel, below DWS (refer to **Figure 11**).

There is a specific DWS for the sum of three select PAH compounds (refer to **Table 7**) and this has not been exceeded for any of the sand and gravel aquifer groundwater samples. There was only one marginal exceedence in BH2 for naphthalene during December 2013 and BH1 during February and May 2014. In the absence of DWS values for many of the individual PAH compounds, reference to EQS criteria has also been made as an initial screen. There have been more widespread PAH compound exceedences when this comparison has been made. This has included BH1, BH2, BH4 and BH6-9 for at least one of the three sampling rounds. It must be noted that a typical EQS criteria for an individual PAH is only 0.05 µg/l.

The monitoring wells where reported PAH concentrations were most elevated (>1 µg/l) are all located in the northern area of the site where reasonably widespread soil contamination by hydrocarbon fuels has been identified (refer to **Figure 6-7**). These were BH1 (3-12.39 µg/l), BH2 (2-30 µg/l) and BH9 (1.4 µg/l in February 2014 only).

3.5.2 Shallow Groundwater (WS-series monitoring wells)

Four shallow monitoring wells installed to a nominal depth of 2m were sampled for groundwater, namely WS17, WS22, WS28 and WS36. Results can be summarised as follows:

- Groundwater cadmium was locally slightly elevated at just under 5 µg/l in WS28, a borehole that reported the presence of slag material and very elevated PAHs (however noting drinking water standard is 5 µg/l);
- Slightly elevated lead at 32 µg/l in WS36 groundwater, and vanadium (15-42 µg/l) in WS22 and WS35;
- Relatively elevated ∑PAHs in WS28 (1.7 µg/l reducing to 1.1µg/l in March 2014) including 8 individual PAH compounds and WS36 (0.21 µg/l), the latter just above the Limit of Detection (LOD) and reducing to <LOD in May 2014.; and
- No TPH or VOCs were reported in any of the 4 shallow groundwater samples collected;

Given that this shallow groundwater is either in contact with or just beneath the Made Ground layer it can be considered to be relatively uncontaminated. It is not groundwater that is reflective of the bulk flow within the main groundwater flow path, which is the underlying sand and gravel aquifer, and as such is not that relevant in this respect.

3.5.3 Deep Chalk Aquifer Groundwater

The active on-site abstraction well has been sampled twice, as part of the December and February monitoring rounds. During both sampling rounds, analysis of groundwater abstracted from the deeper Chalk aquifer (Nestlé well) reported no organic compound detections above respective laboratory limits of detection (LODs). For inorganic constituents which can be naturally present, results were mostly below laboratory LODs, with the exception of slightly elevated boron and trace zinc detections. Both were below respect drinking water standards (DWSs).

3.6 Soil Gas Monitoring Results & Preliminary Risk Assessment

Two full soil gas monitoring rounds have been conducted in February and May 2014, the results for which are presented in **Tables 5a and 5b**. The only location where methane (CH_4) was detected was in the February event at monitoring well WS3 located on the east side of the OOH Building. It is understood that this result (which comprised an explosive concentration of 93.5% CH_4, plus 6.6% carbon dioxide (CO_2)) was due to a local mains gas supply leak from a local underground pipeline, as confirmed during a site visit by a gas supplier technician[11]. A single elevated CO_2 concentration (15%) was also reported in WS3 during the May monitoring round. Repeat monitoring of this borehole was completed the following day and the CO_2 result was 0.1%. The nature of measurement variability in spot ground gas measurements is such that extended monitoring on at least 6 occasions is generally considered to be required before a reasonable assessment of potential risks can be

[11] Technician sampled WS3 directly and confirmed detection of mains gas in WS3

developed. It is therefore recommended that further soil gas monitoring undertaken to provide additional supporting evidence to this current assessment.

Optimum gassing conditions are considered to exist when barometric pressure is at or below 1,000mbar and falling. Barometric pressure data collected during the gas monitoring event ranged between 998-1001mbar. Prevailing weather conditions at the time were dry and cloudy during both monitoring rounds. Other than the as yet unrepresentative data for WS3, the findings of the gas monitoring risk assessment can be summarised as follows:

- Methane (CH_4) were all below the instrument detection limit of 0.3%;
- Carbon Dioxide (CO_2) concentrations ranged between <0.3%-1.1%; and
- Carbon Monoxide (CO) was recorded at 6ppm at WS1. This appears to be an isolated result at a level lower than that of the Workplace Exposure Limit[12] (30ppm, long-term time weighted average) and the Environmental Assessment Level[13] (26ppm). Similarly, CO at this concentration does not provide an explosive risk[14].

Following the development of the Conceptual Site Model a ground gas risk assessment was completed to assess the significance of potential pollutant linkages. This assessment was performed using published UK guidance (Ref. CIRIA Report C665, *Assessing risks posed by hazardous ground gases to buildings*). **Table 5B** summarises results.

This method relates "typical maximum gas concentrations" with "gas screening values" (GSV) to determine the potential risk posed by ground gas to a new building on the site. The GSV for a gas is defined by:

GSV (litres/hr) = borehole flow rate (litres/hr) x gas concentration (% v/v)

The maximum gas concentrations and gas screening values for the site are presented in the **Table 5A** and these have been compared with Table 8.5 of the CIRIA Report C665. This indicates the potential posed by ground gas to a site building would be "Very low risk"[15] (refer to **Table 5B**). For buildings on such sites, no special gas protective measures are considered necessary (refer to Table 8.6 of the CIRIA report) with this risk classification being re-evaluated based on proposed additional monitoring events.

[12] HSE EH40/2005 Workplace Exposure Limits
[13] Environment Agency H1 Annex F – Air Emissions
[14] CO is explosive in air at concentrations of between 12.5-74.2%
[15] Excluding the erroneous results previous discussed.

4 SUMMARY DISCUSSION AND CONCLUSIONS

4.1 Introduction

This section of the report now carries forward the sub-set of site issues that have been flagged as of most potential concern and summarises the key findings with respect to identified soil and/or groundwater contamination. For example this relates to contaminants of potential concern (COPC) that have exceeded relevant Generic Assessment Criteria (GACs) linked to preliminary human health and controlled waters risk assessments. In the case of mercury contamination there is further discussion in this section, designed to better explore the potential importance of this specific issue and possible options for the site.

It is noted that a more detailed human health risk assessment can only be completed once the proposed change of site use of the site is understood in detail. This may be expected to be optimally performed by a potential future developer of the site, and can be subject to the collection of fill-in data in areas of potential concern (identified source areas such as the boiler house and hydrocarbon loss area), based on the established development proposal. The main scenario considered here-in is a commercial end-use for the site or a mixed use with possible residential use along the southern site boundary, close to the existing housing estate. This is linked to the reported understanding that interest and perceived value of the site is most aligned to commercial use.

4.2 Identified Soil Source Areas

Soil TPH and PAH Contamination

There is quite an extensive area of Made Ground and shallow sub-soil that has contamination linked to historic releases of petroleum hydrocarbons (TPH). This appears to be old and in the form of middle to heavier fraction petroleum hydrocarbon in the area in and around the former and existing boiler plants, the associated heavy fuel oil (HFO) and diesel tank farms, and an area along the northern boundary was historically contaminated with hydrocarbons following one major and potentially other more minor losses (the major one in the late 1990s). The main area along the canal boundary appears to extend for at least 250-300m, and be perhaps 10-20m in width to the north of the line of buildings (refer to Figures 6&7). It may be expected to extend a little way under the buildings, if foundations have allowed.

Similarly the hydrocarbon contaminated area described above is also a source area for poly aromatic hydrocarbons (PAHs), and includes 2 locations where PAH concentrations exceed commercial end use GACs (WS18 and WS30 within the footprint or close to the old boiler house). However, unlike for TPH, soil contamination by PAHs is more widely distributed, with the highest reported concentration (2,001 mg/kg) in the southeast, along with 5 other locations with approximately 6-20 mg/kg in soil within the southern third of the site (the latter 5 PAH results were <GACs for commercial). Figure 8 summarises this soil PAH information.

For a potential commercial development, none of the reported soil TPH values (all fractions considered) exceeded respective GAC values for human health, even the sample from WS18

that contained a total of about 17,500 mg/kg TPH, in this case because the majority of the hydrocarbons present were heavy fraction >C21. No TPH has been reported in shallow groundwater so there also appears to be no impact or risk to groundwater that should drive remedial action for TPH under a commercial scenario. For a potential mixed use scenario, if the residential development was along the southern boundary area (say one third) there would be a potential need for quite extensive remedial work to remove and replace the upper soil (Made Ground) profile due to PAH contamination, thought to be linked to the presence of some ash, clinker and industrial slag material in this areas, more than hydrocarbon contamination.

Soil Trace Metal & Metalloid Contamination

Whilst shallow soils have been reported to contain relatively elevated trace metal and metalloid concentration levels, as least locally, this appears to be mainly restricted to mercury (Hg), arsenic (As), chromium (Cr6+ form) and lead (Pb). Of these the latter three have only been reported locally (refer to **Figure 9**). Soil mercury contamination is more widespread. Reported soil concentrations were typically in the fraction of one mg/kg to a few mg/kg range. In 4 samples ≥10 mg/kg has been reported with a peak concentration of 47 mg/kg (WS19 close to former HFO tanks). The elemental mercury GAC for commercial is 18.4 mg/kg and for residential 0.17 mg/kg. It is noted that whilst the presence of elemental mercury is known (it was in electrical switches and was seen in CGCP excavations), it can, with time, slowly convert to inorganic mercury (and other species) which have less stringent soil GAC values.

Whilst it appears clear that the area in reasonably close proximity to the new boiler house footprint is underlain by shallow soil with relatively elevated Hg, other areas of the site have also been impacted. This includes the northeast, southeast and even the southwest sections of the site.

Results from mercury speciation analysis carried out in May 2014 demonstrates that the elemental mercury proportion of the overall total mercury concentration was relatively low and not greater than 7.1% (WS3) of the total mercury concentration reported. The only identified source of mercury on the site was from mercury switches containing elemental mercury. Therefore it is important to consider why elemental mercury is not the major component of the total mercury being recorded, especially from the standpoint of an assessment of potential risk given that the GAC values for elemental and inorganic mercury are distinctly different (i.e. 0.17mg/kg and 238mg/kg, respectively, for the most sensitive residential with plant uptake scenario). The apparent relative absence of elemental mercury can be explained by two potential means, as follows:-

- The elemental mercury has converted to other inorganic forms in the soil (groundwater) environment, and/or;
- The elemental mercury is still present as free (globules) form but this is not dispersed within the soil profile and therefore the general mercury content of

soils is due to other inorganic forms (and may have always been, as suggested by other literature references[16] which reports that most mercury encountered in all environmental media (other than air) is typically in the form of inorganic mercuric salts and organo-complexes).

None of the elemental mercury results are above the respective GAC of 0.17 mg/kg (residential development with plant uptake) or 18.4 mg/kg (commercial scenario). In addition, total mercury results (including both organic and inorganic forms) are also below the inorganic mercury GAC's of 238 mg/kg and 3,600 mg/kg for both residential with plant uptake and commercial development scenarios.

There does remain a residual risk that globules of free elemental mercury still exist in the soil profile in areas of past release (boiler house area) and these could be mobilised during site redevelopment. Given this, redevelopment of source areas where mercury may have been released (assumed to be just the boiler house unless mercury switches were used elsewhere) may be expected to have to be either controlled or restricted, and/or detailed investigation undertaken to characterise the area, prior to development, to define what corrective action may be needed, mainly to prevent potential mobilisation and entry to groundwater.

Soil Asbestos Contamination

Screening of soil samples revealed the presence of asbestos in 6 samples (representing about 15% of soil samples screened. Of these, 4 samples contained fibrous asbestos in the form of chrysotile (and in one case an amosite/chrysotile mix). All of these four samples were collected from boreholes in and around the footprint of the former and existing boiler houses. Reported mass percentages of asbestos fibres were all ≤0.001%, however given fibres are typically very small (have to be viewed under a microscope) and because smaller fibres can be the most respiratable this is not a useful quantum.

Chrysotile and amosite were the main asbestos types used commercially, and represented about 90% and about 10%, respectively, of the asbestos imports into the UK[17]. Inhaling asbestos fibres can cause asbestosis, lung cancer and mesothelioma, as well as non-malignant pleural disease. The primary diseases of potential concern at environmental exposure levels are the asbestos-related cancers (lung cancers and mesotheliomas). In both cases chrysotile is generally accepted as posing lower, but not negligible, risks that the other two (amphibole) types.

The site as a whole is known to have a considerable amount of asbestos containing material (ACM) and this has been subject to separate investigation and assessment. Site closure and redevelopment will have to take due account of the management and mitigation of risk associated with its presence. With respect to the asbestos reported here-in, within site soils

[16] US EPA-452/R-97-005. Report to Congress. Volume III: Fate and Transport of Mercury in the Environment (1997)
[17] Asbestos in soil and Made Ground: a guide to understanding and managing risks is a source of key information (CIRIA C733; 2014)

during the Phase 2 investigation, all has been found in one relatively localised area (boiler house area) where other shallow soil contamination has also been reported.

4.3 Impacts to Groundwater

Groundwater has been impacted, to a degree, by two main contaminant groups, PAHs and trace metal/metalloids, all at reported low to trace concentrations (fraction of µg/l up to a few 10s µg/l). **Figure 11** summarises the main findings.

The 3 monitoring wells where reported PAH concentrations were most elevated (>1 µg/l) are all located in the northern area of the site where reasonably widespread soil contamination by hydrocarbon fuels has been identified. These were BH1 (3-12.5 µg/l), BH2 (2-30 µg/l) and BH9 (1.4 µg/l in February 2014 only). In more down gradient wells (BH3-6), closer to the down gradient eastern boundary reported, BH3 and BH5 reported no PAHs (<LOD), BH4 0.7 µg/l total PAHs (February 2014) and BH6 0.3 µg/l (December 2013). Therefore, it appears that a reasonable level of attenuation has been taking place between the area of residual hydrocarbon contamination near the canal and the eastern boundary.

The risk of significant impact on the River Crane about 200+ metres down gradient of the boundary area wells is considered negligible. Groundwater within the River Terrace sand and gravels, which is classified as a Principal aquifer, is not considered a receptor in its own right, given the site urban/industrial setting, but rather a migration pathway to the river. The Chalk aquifer at depth, which has also been sampled via a site well and found not to be contaminated, is the groundwater body used locally for non-potable water supply and therefore is a receptor in its own right.

Mercury has impacted groundwater in one monitoring well (BH1) installed within the shallow sand and gravel aquifer close to the existing boiler house on its northeast side and, to a lesser degree, the shallow groundwater at WS22 located hydraulically down-gradient of BH1. Site management has reported visual evidence of soil contamination on the south side of this boiler house, when enabling work for the CGCP was completed in the early 1990s. It has not been possible to install a monitoring well immediately down gradient CGCP (BH8 is close but up-gradient and BH3 is the nearest approximately down gradient well, some 150m distant.

This evidence from the north and south side of the boiler house suggest soil and groundwater has been impacted locally by mercury (Hg). The BH1 peak concentration of 41 µg/l Hg is similar to aqueous solubility and therefore this suggests some mercury has got into the shallow sand and gravel aquifer system. Elemental mercury is very dense and if released into the subsurface would tend to migrate rapidly down through the soil profile until it reaches a low permeability horizon (such as the London Clay immediately beneath the sand and gravel aquifer).

Mercury was reported in soils during the CGCP excavation, so it has been released at the site. This was reported to have been associated with mercury containing switches, thought to have been specifically used in the existing boiler house. Finding elevated groundwater concentrations in BH1 also suggests it was released around the building footprint (not just to

the south). The site drainage plan shows localised in-floor drains for dirty water that are directed east and west within the boiler house. The east directed drains connect to the outside drainage system that passes close to BH1. The deeper underground ducts that link from the former boiler house to the Undercroft area in the main building are positioned between the existing boiler house and the CGCP. Released elemental mercury globules could have found their way into drains or deep structures and migrated within them under they encountered a point of poor integrity whereby they could have migrated down under their specific gravity. It could also have been inadvertently moved outside (on footwear) and ultimately been washed in rainwater down drains or elsewhere.

Excavation associated with the CGCP development appeared to have gone to a depth of between 1.5-2m (WS31 reported 1.8m concrete infill). The borehole log for BH1 and BH8 highlight the depth to the top of the main sand and gravel aquifer was at 2.4-2.5mbgl, with clayey gravel above this in BH8. Whilst it would not explain the presence of elevated mercury in BH1 groundwater this excavation might have allowed elemental mercury migration to the base of the excavation (which if free to do so would do so rapidly) which in turn was only just above the sand and gravels. As such this type of activity might have inadvertently introduced mercury into the aquifer.

It is key that BH1 is located in a relatively up-gradient location of the site near the boiler house and canal. Groundwater sampled from 4 monitoring wells, which together are expected to represent groundwater that is down gradient of the Boiler House (BH1) area (namely BH2-BH5), did not detect mercury (refer to **Figure 11**). Therefore, there does not appear to be a shallow plume of mercury contaminated groundwater down gradient to the southeast. Further, mercury has not been detected in the on-site Chalk well groundwater. Given the thickness of London clay between the shallow and Chalk aquifers it is not considered plausible that mercury could migrate to depth.

At near-neutral pH and the ORP (redox) reported in BH1 groundwater the stable species of mercury in soils may be expected to remain as elemental mercury. Small globules of elemental mercury in the shallow aquifer could essentially be positioned at its base with little potential for lateral movement once in a low spot. Pore pressures in the clay might be expected to prevent mercury migration into it (as would mercury's propensity to remain bound together. The aqueous solubility of elemental mercury is also very limited (few 10s µg/l at most); It is expected to be somewhat volatile even in the dissolved phase (Henri's Law Constant); however the maximum vapour concentration coming from the dissolved phase would be expected to be quite small.

One point of note, linked to possible increased mercury mobility in groundwater, elevated (alkaline) pH can greatly promote its migration. This is why very high levels of mercury (in the 1-10s mg/l range is possible) can be found at chlor-alkali works that used mercury catalyst. Groundwater conditions in the immediate vicinity of chlor-alkali cell buildings tend to be susceptible to the "perfect storm" of mercury and caustic (sodium hydroxide) loading, whereby the elevated pH increases the mobility of mercury. The only reason this is mentioned here is that shallow groundwater from some site wells is quite alkaline (pH8.5-

9.7), specifically BH1-2, BH8 and WS22. BH1 groundwater reported pH7.07 in December 2013 but had increased to pH8.92 in February 2014 with a further increase to pH9.23 in May 2014. Reported mercury levels during these three sampling events were 3 µg/l, 41 µg/l and 30 µg/l respectively. A similar increasing mercury concentration trend can be observed in WS22, down gradient of BH1, from which mercury concentrations have increased from 0.21µg/l to 1.24µg/l between February and May 2014 with an associated pH increase from pH9.59 to pH9.87. It might be reasonable to assume that the increased pH, which may be suspected to be due to some loss of sodium hydroxide used locally, could leach more mercury from soils and within the aquifer. As such keeping a close check on groundwater quality close to and down gradient of the boiler house is recommended during 2014 (with audit of caustic storage, transfer and use to check that losses are not occurring).

If an absence of a groundwater migration pathway for dissolved mercury due to hydro-chemical controls is substantiated, then the potential risk that soil and groundwater mercury contamination poses appears to be only two-fold. Firstly whilst concentrations were only very locally found to be relatively elevated (WS19 for example), where there is free elemental mercury, as previously identified in the CGCP excavation, this will represent a specific risk driver for both commercial and residential development scenarios, and particularly the construction workers.

Secondly, if elemental mercury remains in Made Ground, beneath and around the boiler house in particular, this represents a potential environmental accident waiting to happen, if this area was redeveloped. This is simply because any open excavation and indeed structures like piles run the risk of introducing mercury to greater depth and potentially into the sand and gravel aquifer. As a List 1 substance this is simply not allowed (although it can be anticipated that the pragmatic view would be that if mercury has migrated historically in the past, and provided it is seen as *de minimis* and not posing a risk to a wider environment or causing deterioration of groundwater quality, it should be acceptable to leave *insitu* as it would not be easily remediated). List 1 substances should be prevented from entering groundwater and a developer of the site would have to adhere to this requirement.

On this basis, the boiler house area where free elemental mercury has been observed during previous construction works can be expected to require close management and control during redevelopment. This could take the form of detailed investigation to characterise the area prior to development followed by controlled excavation and removal of shallow soil contamination, or possibly imposing some form of restriction on development in this small area of the site to prevent potential mobilisation and entry of mercury to groundwater.

o0o

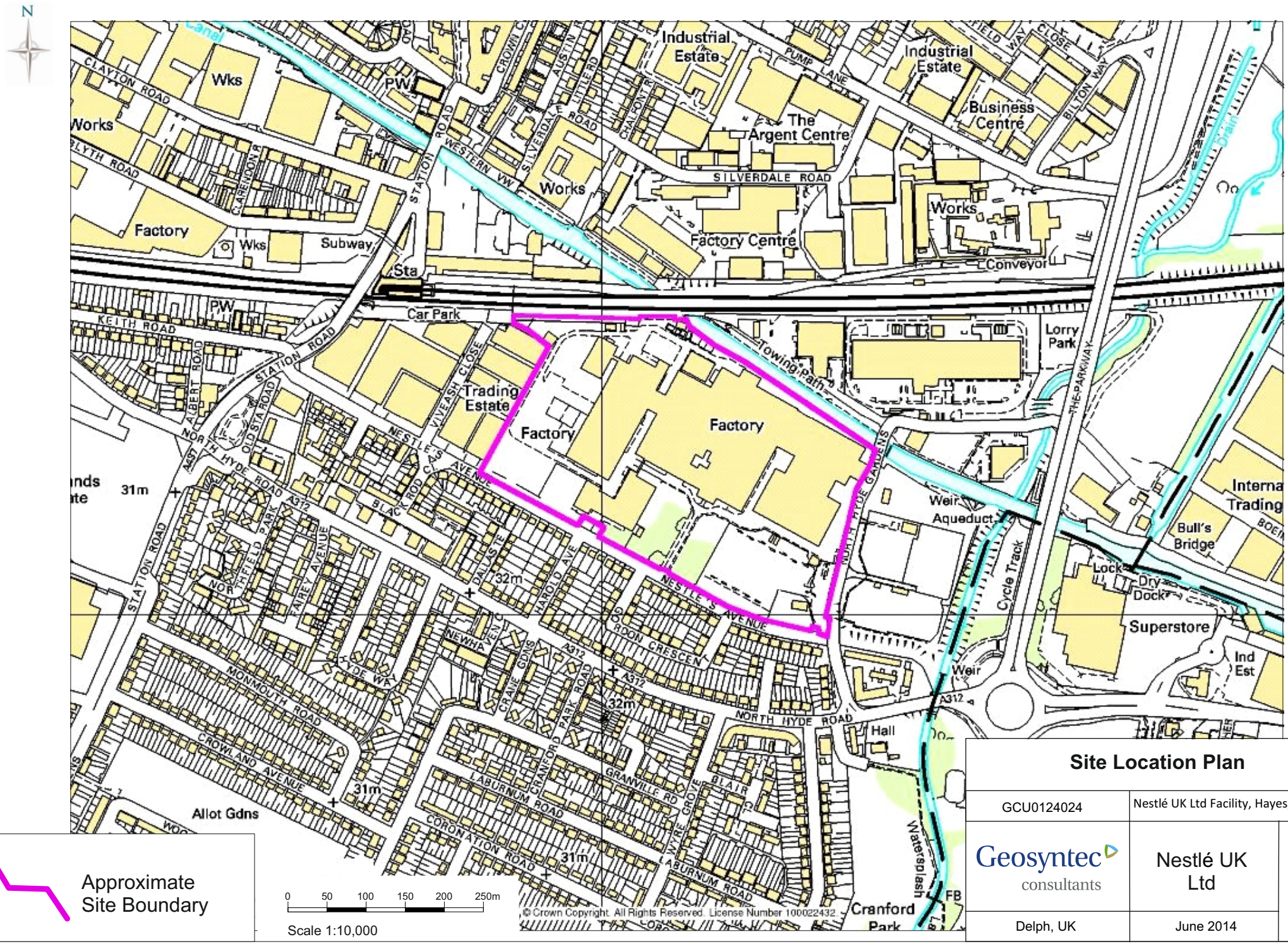
Geosyntec Consultants trust the information and discussion contained in this report meets all your immediate requirements. Please do not hesitate to contact the undersigned if you have any further comments or questions about any aspect of the work.

Respectfully submitted

On behalf of Geosyntec Consultants

Nick Roe
Project Manager

Dr. Marcus Ford
Project Director

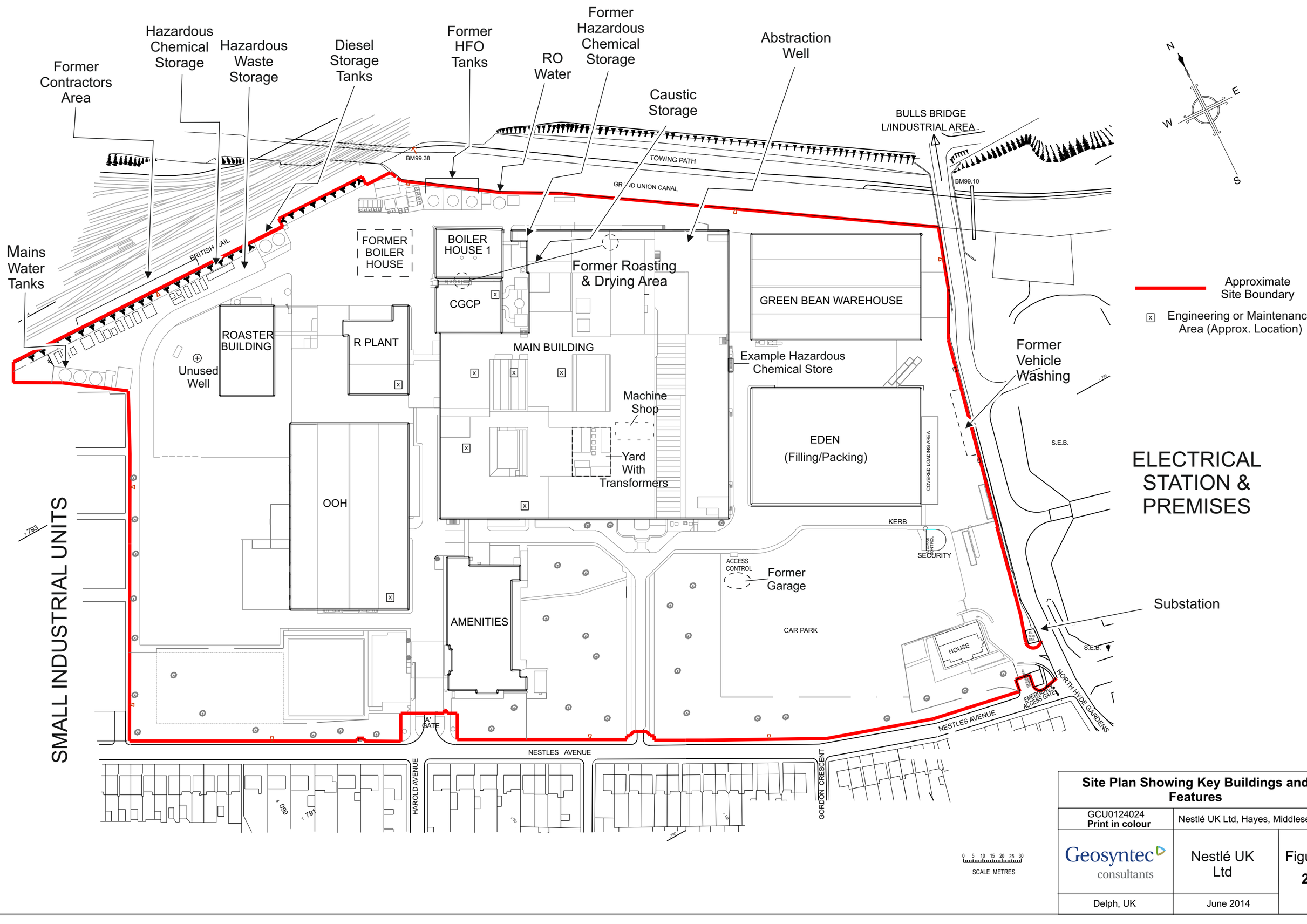


Approximate Site Boundary

Scale 1:10,000

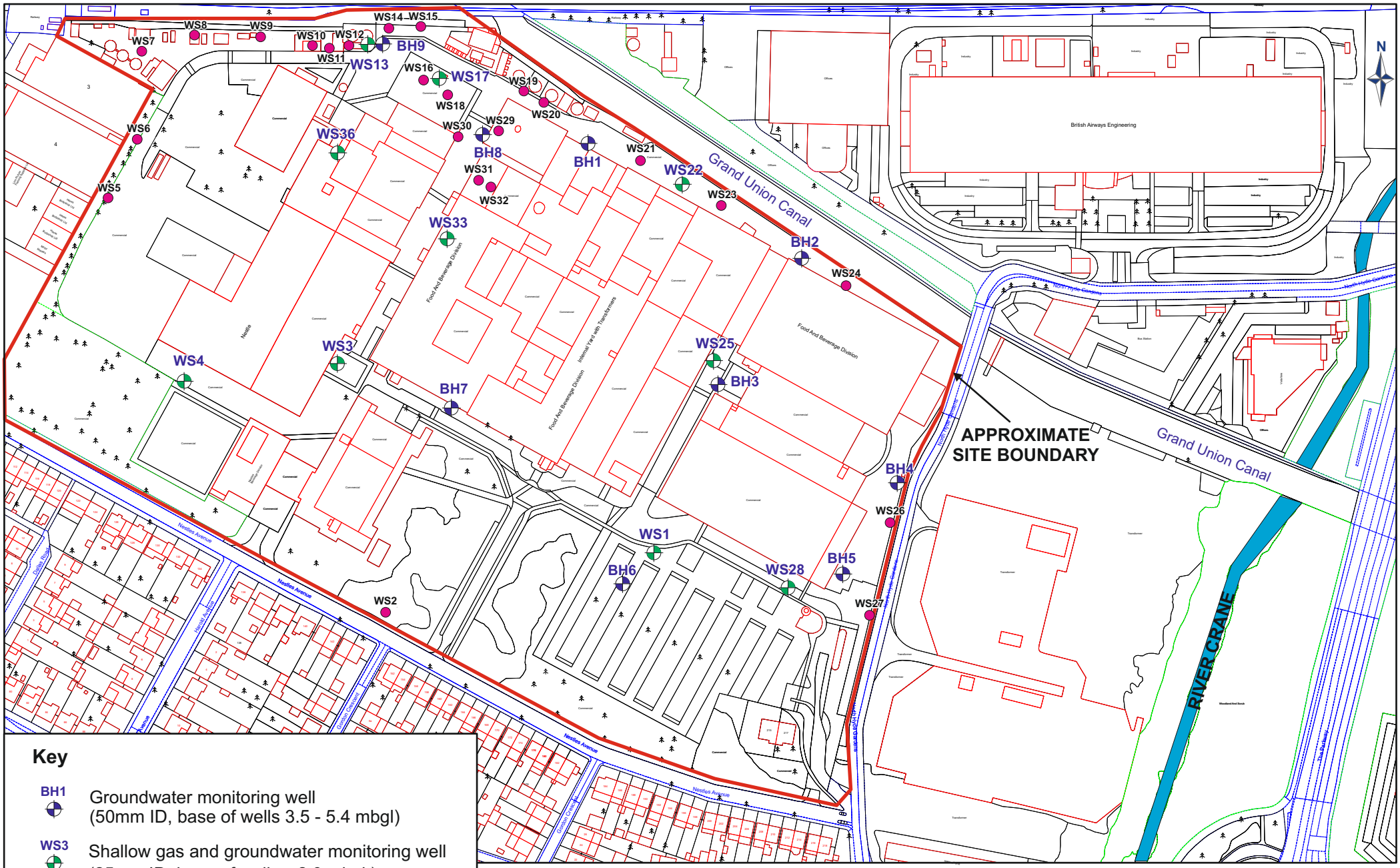
Site Location Plan

GCU0124024	Nestlé UK Ltd Facility, Hayes, Middlesex	
Geosyntec consultants	Nestlé UK Ltd	Figure 1
Delph, UK	June 2014	



Site Plan Showing Key Buildings and Features

GCU0124024 **Print in colour**	Nestlé UK Ltd, Hayes, Middlesex	
Geosyntec consultants	Nestlé UK Ltd	Figure **2**
Delph, UK	June 2014	



Key

BH1 — Groundwater monitoring well (50mm ID, base of wells 3.5 - 5.4 mbgl)

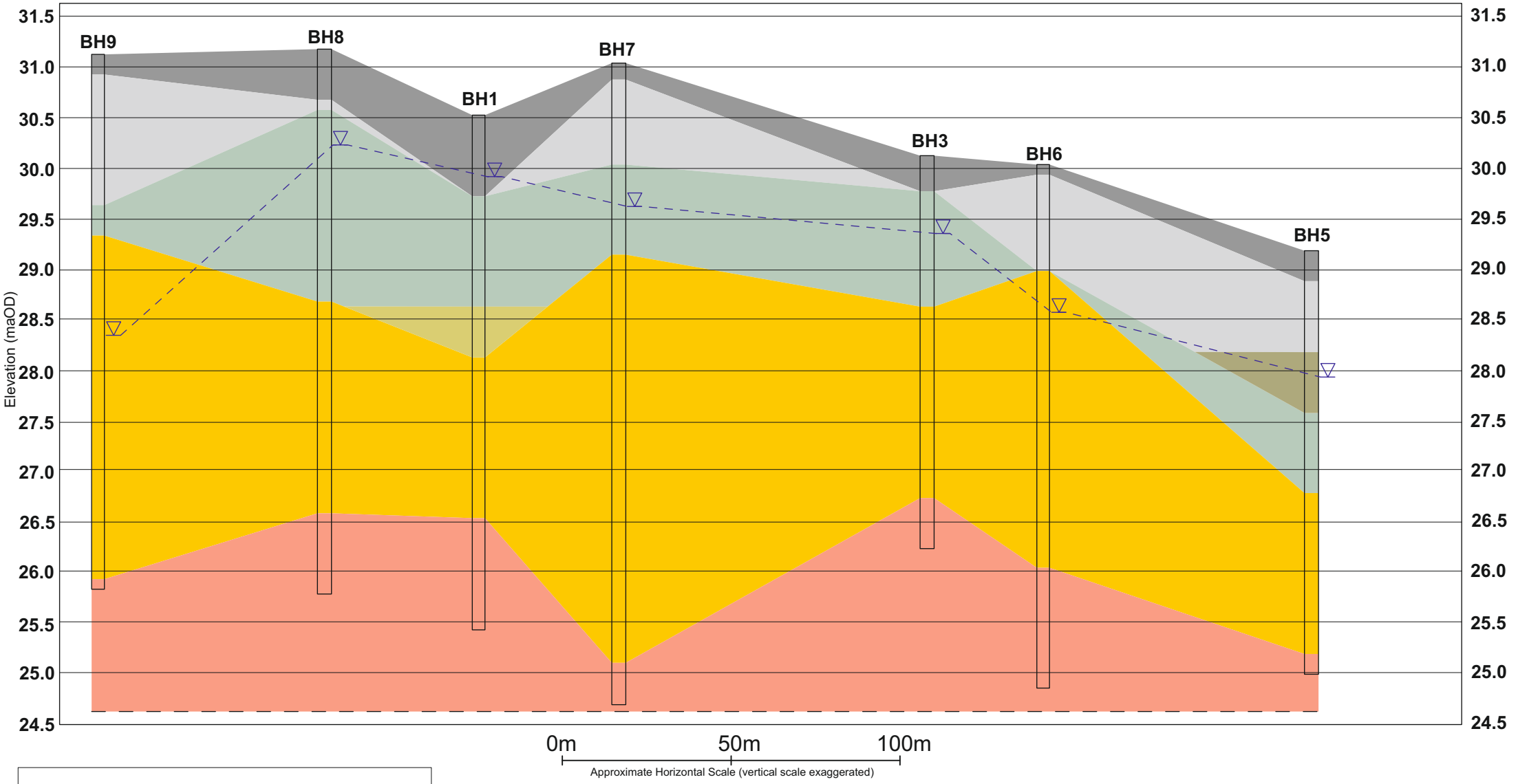
WS3 — Shallow gas and groundwater monitoring well (25mm ID, base of wells ≤2.0 mbgl)

WS2 — Shallow soil sampling location (≤2.0 mbgl)

0m 50m 100m

Approximate Scale

Geosyntec consultants	Nestlé UK Ltd	Figure 3	**Site Plan Showing all Phase 2 Investigation Locations**
Delph, UK	June 2014		Nestlé UK Ltd, Hayes — GCU0124024 — **Print in colour**

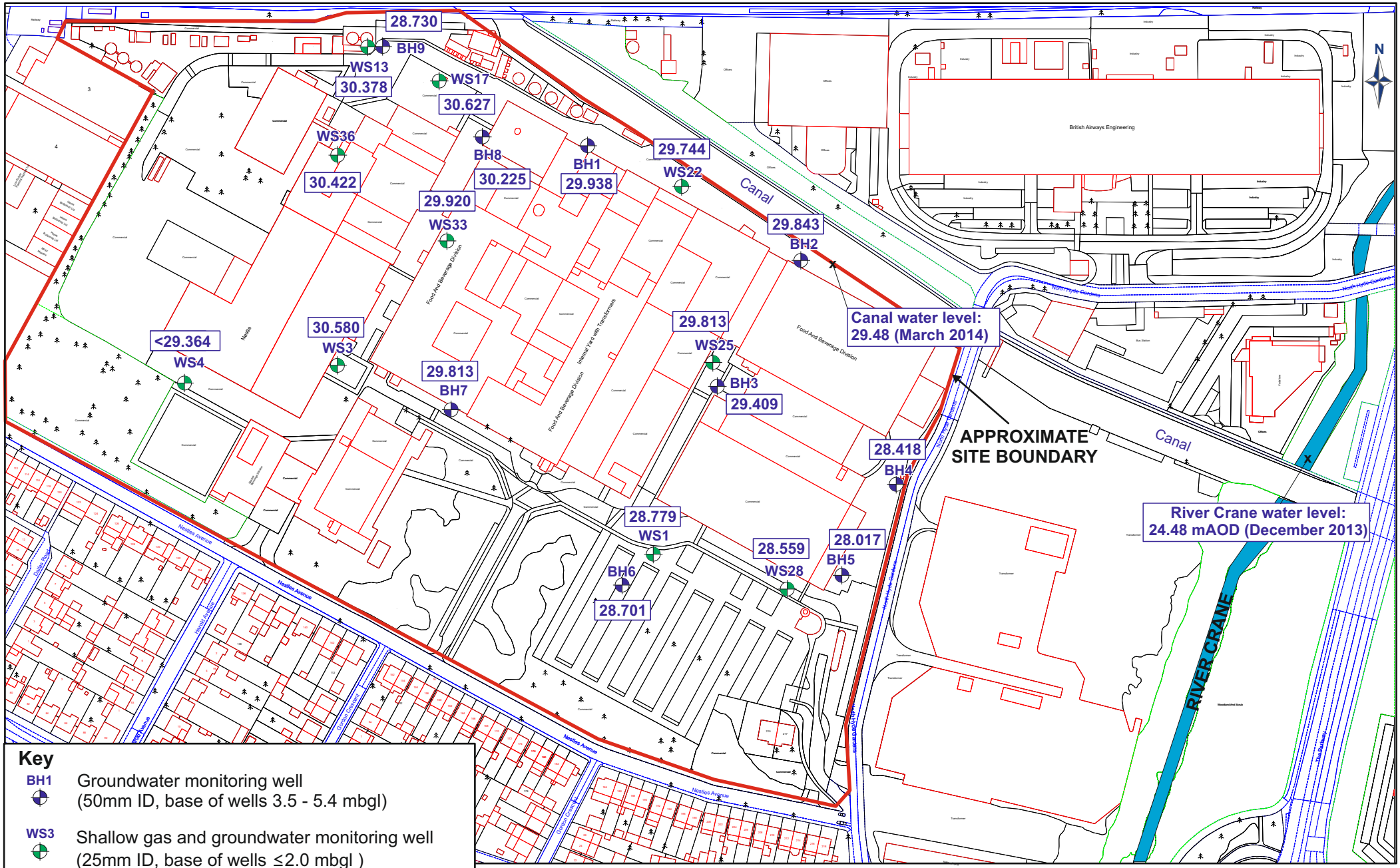


- Hardstanding - Reinforced Concrete/Asphalt
- Made Ground
- Clayey Gravel/Gravelly Clay
- Silt
- Langley Silt Member - Silt
- Lynch Hill Gravel Member - Sand and Gravel
- London Clay
- Inferred groundwater piezometric surface (December 2013)

Schematic Geological Cross-Section

GCU0124024 **Print in colour**	Nestlé UK Ltd, Hayes, Middlesex
Geosyntec consultants	Nestlé UK Ltd
Delph, UK	June 2014

Figure **4**



Key

BH1 — Groundwater monitoring well (50mm ID, base of wells 3.5 - 5.4 mbgl)

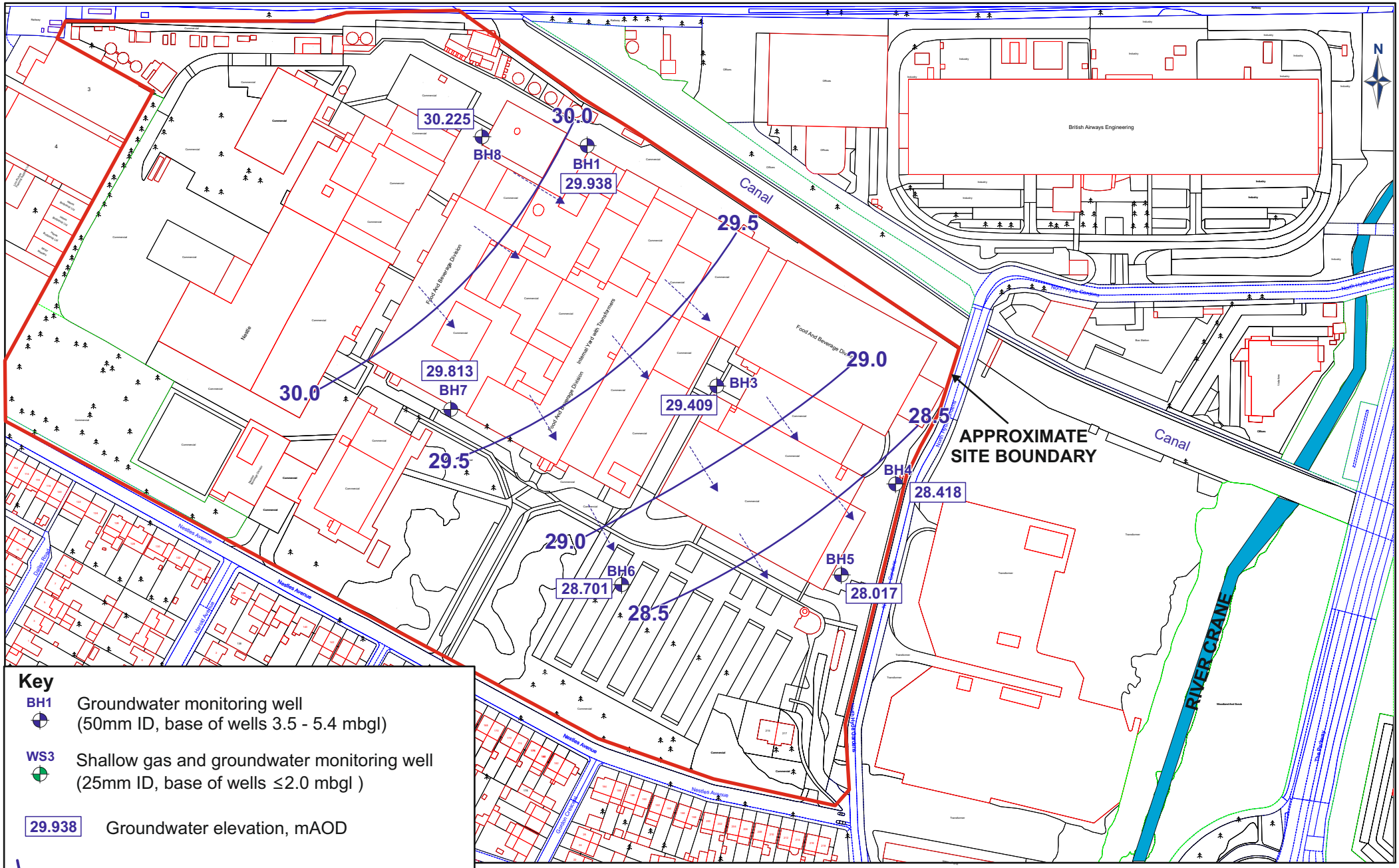
WS3 — Shallow gas and groundwater monitoring well (25mm ID, base of wells ≤2.0 mbgl)

29.938 — Groundwater elevation, mAOD

0m 50m 100m

Approximate Scale

Geosyntec consultants	Nestlé UK Ltd	Figure **5a**	**Site Plan Showing all Groundwater Elevations, 28 February 2014**
Delph, UK	June 2014		Nestlé UK Ltd, Hayes / GCU0124024 / **Print in colour**



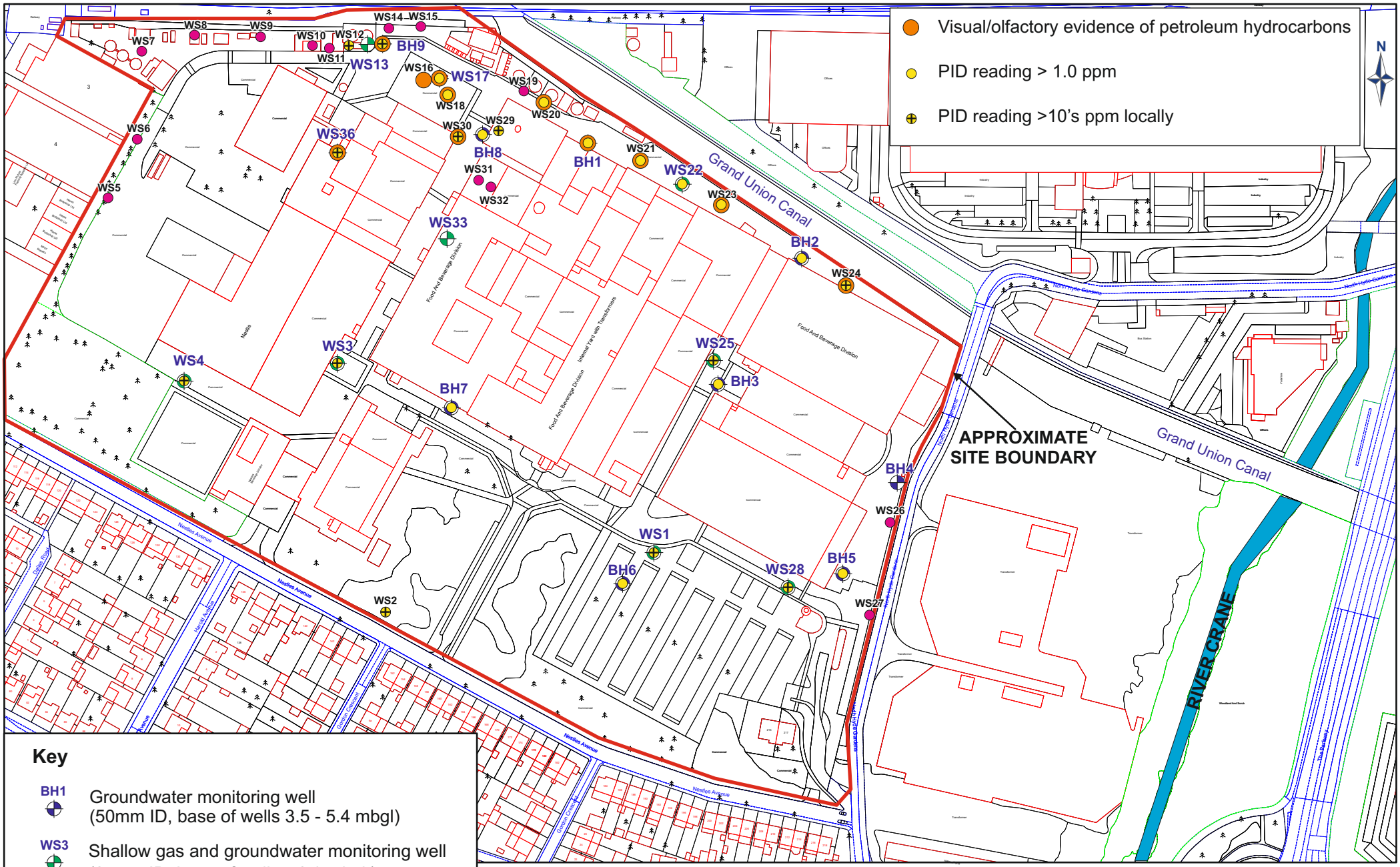
Key

- **BH1** — Groundwater monitoring well (50mm ID, base of wells 3.5 - 5.4 mbgl)
- **WS3** — Shallow gas and groundwater monitoring well (25mm ID, base of wells ≤2.0 mbgl)
- **29.938** — Groundwater elevation, mAOD
- **28.5** — Inferred shallow groundwater elevation contours (mAOD) and inferred flow direction

0m 50m 100m

Approximate Scale

Geosyntec consultants	Nestlé UK Ltd	Figure **5b**	**Inferred Groundwater Flow Regime, Sand & Gravel Aquifer, 28 February 2014**
Delph, UK	June 2014		Nestlé UK Ltd, Hayes / GCU0124024 **Print in colour**



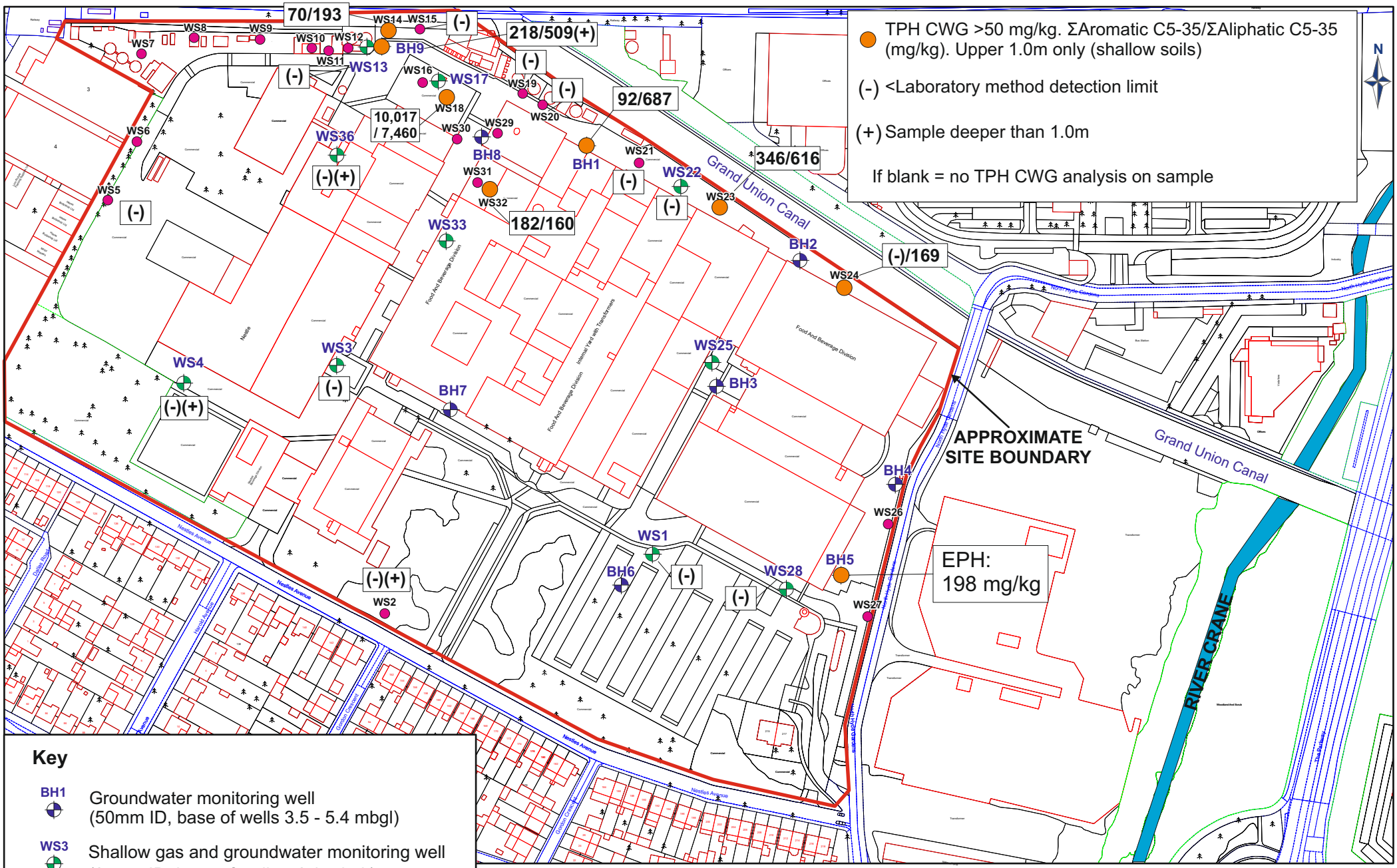
Key

- **BH1** — Groundwater monitoring well (50mm ID, base of wells 3.5 - 5.4 mbgl)
- **WS3** — Shallow gas and groundwater monitoring well (25mm ID, base of wells ≤2.0 mbgl)
- **WS3** — Shallow soil sampling location (<2.0 mbgl)

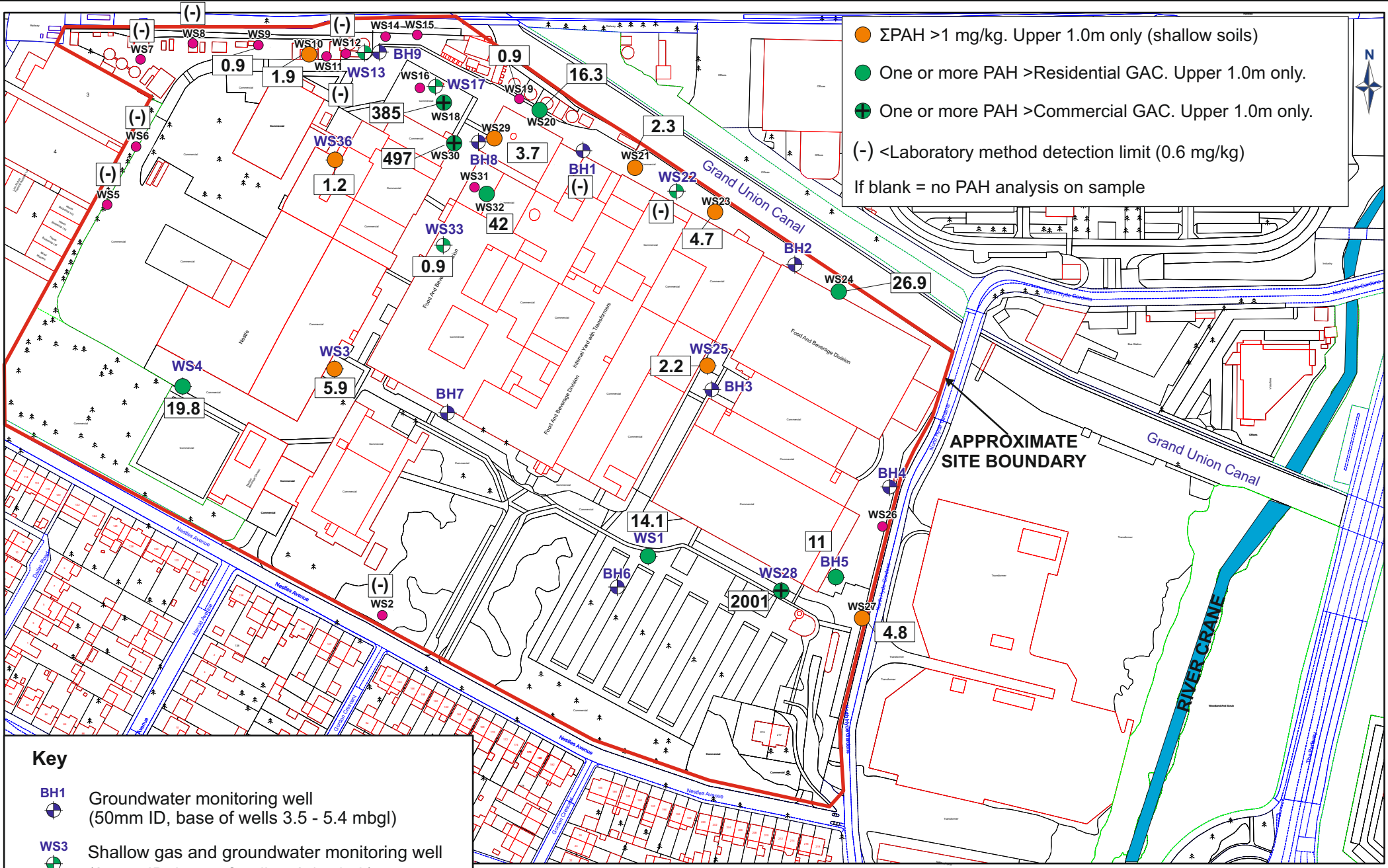
0m 50m 100m

Approximate Scale

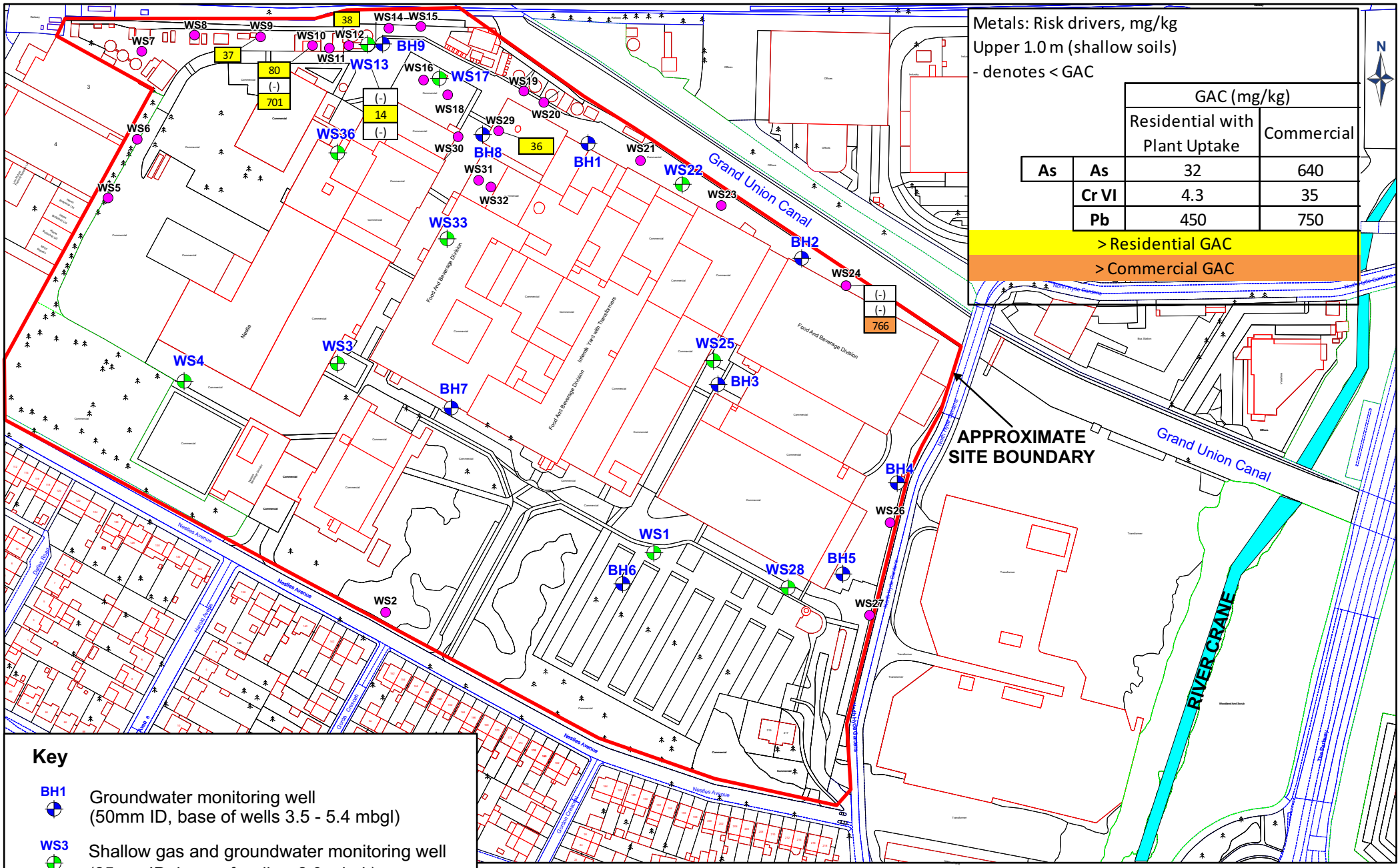
Geosyntec consultants	Nestlé UK Ltd	Figure 6	**Site Plan Showing the main locations with visual/olfactory evidence of petroleum hydrocarbon contamination (including PID findings)**
Delph, UK	June 2014		Nestlé UK Ltd, Hayes — GCU0124024 **Print in colour**



Geosyntec consultants	Nestlé UK Ltd	Figure 7	**Site Plan Showing Soil Total Petroleum Hydrocarbon (TPH) Results**
Delph, UK	June 2014	Nestlé UK Ltd, Hayes	GCU0124024 **Print in colour**



Geosyntec consultants	Nestlé UK Ltd	Figure 8	**Site Plan Showing Soil Poly Aromatic Hydrocarbon (PAH) Results**
Delph, UK	June 2014	Nestlé UK Ltd, Hayes	GCU0124024 **Print in colour**



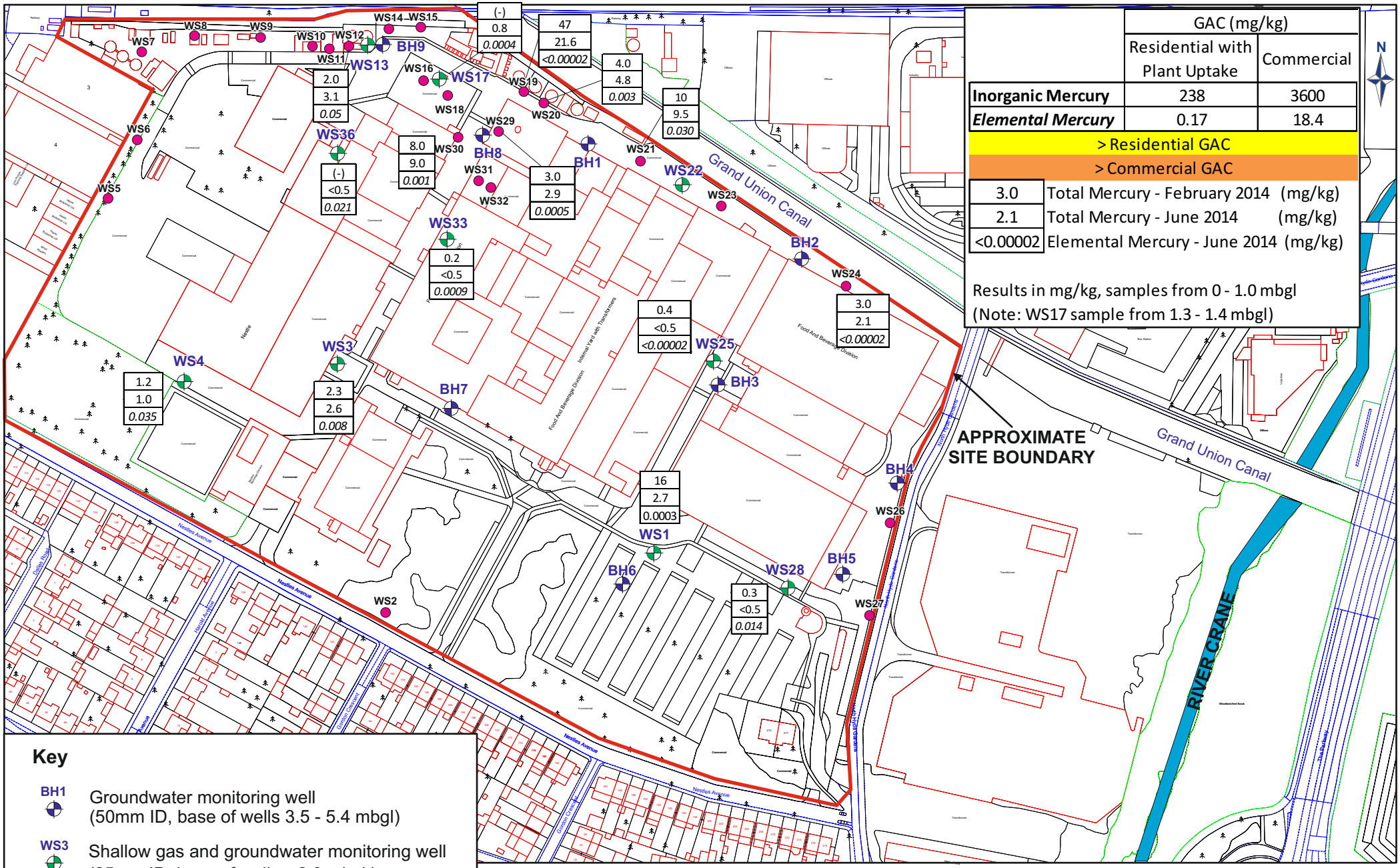
Key

- BH1 — Groundwater monitoring well (50mm ID, base of wells 3.5 - 5.4 mbgl)
- WS3 — Shallow gas and groundwater monitoring well (25mm ID, base of wells ≤2.0 mbgl)
- WS3 — Shallow soil sampling location (<2.0 mbgl)

0m 50m 100m

Approximate Scale

Geosyntec consultants	Nestlé UK Ltd	Figure 9	**Site Plan Showing Soil Trace Metal and Metalloid Results (excluding mercury)**
Delph, UK	June 2014		Nestlé UK Ltd, Hayes — GCU0124024 — **Print in colour**



	GAC (mg/kg)	
	Residential with Plant Uptake	Commercial
Inorganic Mercury	238	3600
Elemental Mercury	0.17	18.4
> Residential GAC		
> Commercial GAC		

3.0	Total Mercury - February 2014 (mg/kg)
2.1	Total Mercury - June 2014 (mg/kg)
<0.00002	Elemental Mercury - June 2014 (mg/kg)

Results in mg/kg, samples from 0 - 1.0 mbgl
(Note: WS17 sample from 1.3 - 1.4 mbgl)

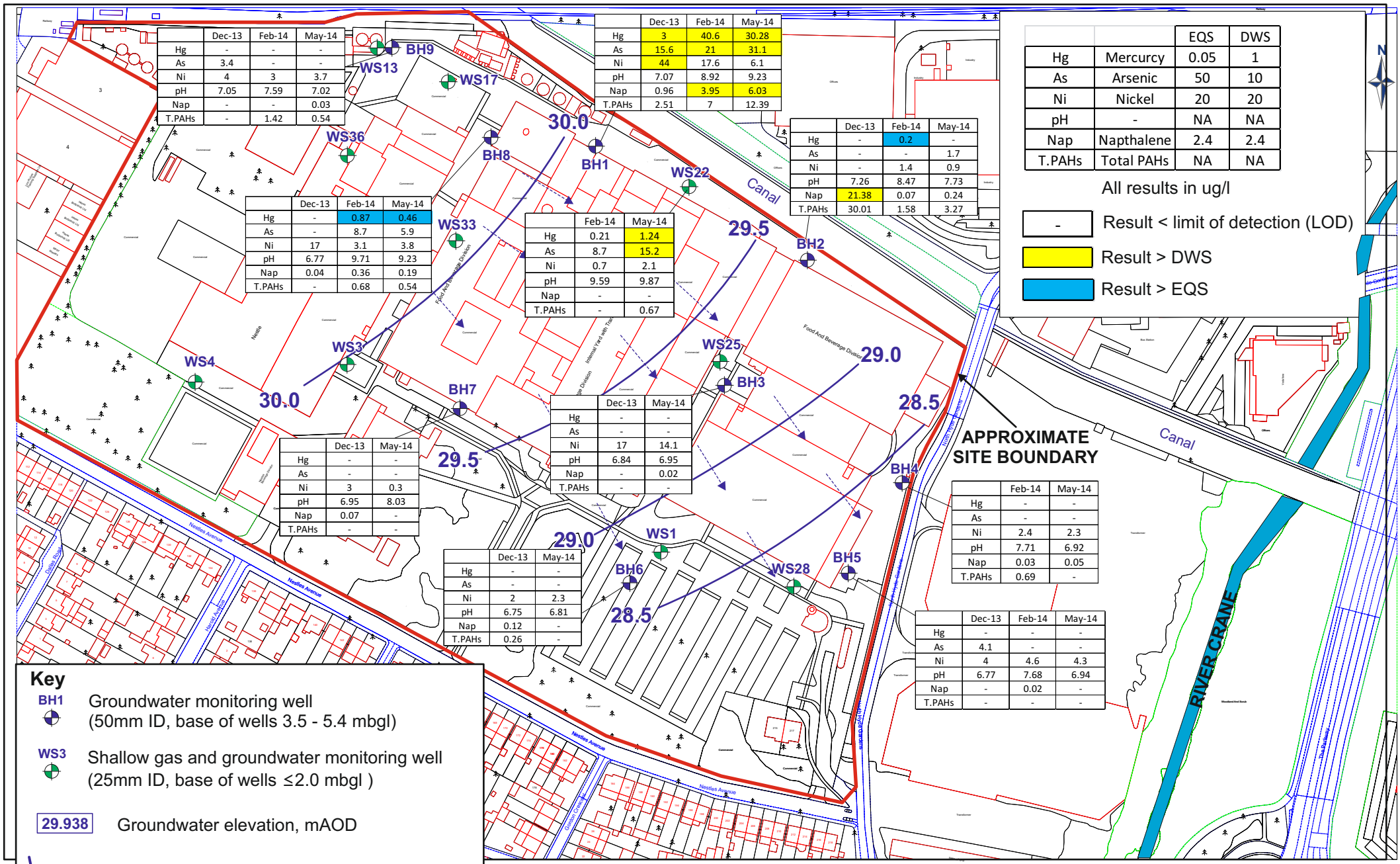
Key

- BH1 — Groundwater monitoring well (50mm ID, base of wells 3.5 - 5.4 mbgl)
- WS3 — Shallow gas and groundwater monitoring well (25mm ID, base of wells ≤2.0 mbgl)
- WS3 — Shallow soil sampling location (<2.0 mbgl)

0m 50m 100m

Approximate Scale

Geosyntec consultants	Nestlé UK Ltd	Figure 10	**Speciated mercury results in shallow soils, (comparison of results)**
Delph, UK	June 2014		Nestlé UK Ltd, Hayes — GCU0124024 — **Print in colour**



	Dec-13	Feb-14	May-14
Hg	-	-	-
As	3.4	-	-
Ni	4	3	3.7
pH	7.05	7.59	7.02
Nap	-	-	0.03
T.PAHs	-	1.42	0.54

	Dec-13	Feb-14	May-14
Hg	3	40.6	30.28
As	15.6	21	31.1
Ni	44	17.6	6.1
pH	7.07	8.92	9.23
Nap	0.96	3.95	6.03
T.PAHs	2.51	7	12.39

	Dec-13	Feb-14	May-14
Hg	-	0.2	-
As	-	-	1.7
Ni	-	1.4	0.9
pH	7.26	8.47	7.73
Nap	21.38	0.07	0.24
T.PAHs	30.01	1.58	3.27

	Dec-13	Feb-14	May-14
Hg	-	0.87	0.46
As	-	8.7	5.9
Ni	17	3.1	3.8
pH	6.77	9.71	9.23
Nap	0.04	0.36	0.19
T.PAHs	-	0.68	0.54

	Feb-14	May-14
Hg	0.21	1.24
As	8.7	15.2
Ni	0.7	2.1
pH	9.59	9.87
Nap	-	-
T.PAHs	-	0.67

	Dec-13	May-14
Hg	-	-
As	-	-
Ni	17	14.1
pH	6.84	6.95
Nap	-	0.02
T.PAHs	-	-

	Dec-13	May-14
Hg	-	-
As	-	-
Ni	3	0.3
pH	6.95	8.03
Nap	0.07	-
T.PAHs	-	-

	Dec-13	May-14
Hg	-	-
As	-	-
Ni	2	2.3
pH	6.75	6.81
Nap	0.12	-
T.PAHs	0.26	-

	Feb-14	May-14
Hg	-	-
As	-	-
Ni	2.4	2.3
pH	7.71	6.92
Nap	0.03	0.05
T.PAHs	0.69	-

	Dec-13	Feb-14	May-14
Hg	-	-	-
As	4.1	-	-
Ni	4	4.6	4.3
pH	6.77	7.68	6.94
Nap	-	0.02	-
T.PAHs	-	-	-

		EQS	DWS
Hg	Mercurcy	0.05	1
As	Arsenic	50	10
Ni	Nickel	20	20
pH	-	NA	NA
Nap	Napthalene	2.4	2.4
T.PAHs	Total PAHs	NA	NA

All results in ug/l

- Result < limit of detection (LOD)
- Result > DWS
- Result > EQS

Key

- **BH1** — Groundwater monitoring well (50mm ID, base of wells 3.5 - 5.4 mbgl)
- **WS3** — Shallow gas and groundwater monitoring well (25mm ID, base of wells ≤2.0 mbgl)
- **29.938** — Groundwater elevation, mAOD
- **28.5** — Inferred shallow groundwater elevation contours (mAOD) and inferred flow direction

0m 50m 100m

Approximate Scale

Geosyntec consultants	Nestlé UK Ltd	Figure **11**	**Site Plan Showing Main Groundwater Results**
Delph, UK	June 2014	Nestlé UK Ltd, Hayes	GCU0124024 **Print in colour**

Geosyntec
consultants

TABLES

Table 1a: Soil Sample Analysis Inventory and Rationale

Location		Sample ID	Sample Depth (m)	Sample Date	Analysis												Investigation Area
					TPH CWG	PAH	PCB	VOC	Metals	Cr VI	pH	FOC	Asbestos Screen	Quantitative Asbestos Analysis	Sol. Sulphate	EPH	
Phase 2A Sample Locations	BH1	BH1	0.9-1.0	29/11/2013	X	X		X	X	X	X	X	X				
	BH2	BH2	1.7-1.8	02/12/2013		X		X	X	X	X	X				X	
	BH3	BH3	1.0-1.1	28/11/2013		X		X	X	X	X	X	X			X	
	BH3	BH3-FOC	3.0	28/11/2013								X					
	BH5	BH5	0.9	29/11/2013		X		X	X	X	X	X	X	X		X	
	BH6	BH6-FOC	3.0	26/11/2013								X					
	BH7	BH7	1.6-1.7	26/11/2013	X	X		X	X	X	X	X	X				
	BH8	BH8	1.85-1.9	27/11/2013	X	X		X	X	X	X		X				
	BH8	BH8-FOC	3.5-3.6	27/11/2013								X					
	BH9	BH9	1.2-1.3	27/11/2013	X	X		X	X	X	X	X	X				
	BH9	BH9-FOC	3.0	27/11/2013								X					
Phase 2B Sample Locations	WS1	SO-WS1-190214	0.7-0.8	19/02/2014	X	X		X	X	X	X	X	X		X		Former Site Garage Area
	WS2	SO-WS2-140214	0.9-1.0	14/02/2014		X			X	X			X				Site Effluent Discharge Point
		SO-WS2-190214	1.2-1.3	19/02/2014	X			X									
	WS3	SO-WS3-190214	0.7-0.8	19/02/2014	X	X		X	X	X	X	X	X		X		Downgradient of ground floor workshop
	WS4	SO-WS4-180214	0.7-0.8	18/02/2014		X			X	X			X				Site effluent forwarding pump
		SO-WS4-190214	1.6-1.7	19/02/2014	X			X									
	WS5	SO-WS5-130214	0.7-0.8	13/02/2014	X	X		X	X	X			X		X		Eastern Site Boundary - potential off site contamination sources
	WS6	SO-WS6-130214	1.0-1.1	13/02/2014		X			X	X			X				
	WS7	SO-WS7-130214	0.7-0.8	13/02/2014		X			X	X	X	X	X		X		North western site boundary - potential off site contamination sources and hydrocarbon storage area
	WS8	SO-WS8-130214	0.8-0.9	13/02/2014		X			X	X			X				
	WS9	SO-WS9-130214	0.3-0.4	13/02/2014		X		X	X	X	X	X	X		X		
	WS10	SO-WS10-130214	0.7-0.8	13/02/2014		X		X	X	X			X				
	WS11	SO-WS11-130214	0.6-0.7	13/02/2014							X	X	X				Hazardous Chemicals Store
	WS12	SO-WS12-190214	0.8-0.9	19/02/2014		X		X	X				X				North site boundary - potential off site contamination sources, bulk hydrocarbon storage area
	WS13	SO-WS13-140214	0.7-0.8	14/02/2014	X	X		X	X	X	X	X	X		X		
	WS14	SO-WS14-140214	0.8-0.9	14/02/2014	X			X	X	X	X	X	X				
	WS15	SO-WS15-140214	0.4-0.5	14/02/2014	X			X					X		X		
	WS16	SO-WS16-140214	0.9-1.0	14/02/2014			X		X				X				Former boiler house area and current electrical sub-station
	WS17	SO-WS17-140214	0.9-1.0	14/02/2014			X						X				
		SO-WS17-180214	1.3-1.4	18/02/2014			X						X				
	WS18	SO-WS18-140214	0.4-0.5	14/02/2014	X	X	X	X	X	X	X	X	X	X	X		
	WS19	SO-WS19-170214	0.7-0.8	17/02/2014	X	X		X	X	X	X	X	X		X		Bulk hydrocarbon storage and known area of spillage
	WS20	SO-WS20-170214	0.6-0.7	17/02/2014	X	X		X	X	X			X	X			
	WS21	SO-WS21-170214	0.7-0.8	17/02/2014	X	X		X	X	X	X	X	X	X	X		Known fuel and heavy metal contaminant impacts to shallow soils
	WS22	SO-WS22-180214	0.9-1.0	18/02/2014	X	X		X	X	X			X				
	WS23	SO-WS23-180214	0.3-0.4	18/02/2014	X	X		X	X	X	X	X	X		X		
	WS24	SO-WS24-180214	0.9-1.0	18/02/2014	X	X			X	X			X				North eastern site boundary - potential off site contamination sources
	WS25	SO-WS25-180214	0.6-0.7	18/02/2014		X		X	X	X	X	X	X		X		Downgradient of hazardous chemical store
	WS27	SO-WS27-180214	0.6-0.7	18/02/2014		X			X	X	X	X	X		X		Eastern site boundary - potential off site contamination and approximate former vehicle washdown area
	WS28	SO-WS28-180214	0.6-0.7	18/02/2014		X			X	X			X				Site Effluent sampling and discharge point
		SO-WS28-180214	1.8-1.9	18/02/2014	X			X									
	WS29	SO-WS29-190214	0.7-0.8	19/02/2014	X	X		X	X	X	X	X	X	X	X		Current boiler house area - internal
	WS30	SO-WS30-180214	0.6-0.7	18/02/2014		X			X	X			X	X			Down-gradient of R-Plant sump
	WS32	SO-WS32-200214	0.5-0.6	20/02/2014	X	X		X	X	X			X		X		CGCP area - internal
	WS33	SO-WS33-190214	0.5-0.6	19/02/2014	X	X		X	X	X	X	X	X		X		Briggs workshop - internal
		SO-WS33-200214	1.3-1.4	20/02/2014	X	X		X	X	X							
	WS36	SO-WS36-190214	0.8-0.9	19/02/2014		X			X	X	X		X				R Plant - possible caustic losses to floor - external
		SO-WS36-190214	1.4-1.5	19/02/2014	X			X									

Table 1b: Follow-on Speciated Mercury Soil Sample Analysis Inventory and Rationale

Location		Sample ID	Sample Depth (m)	Sample Date	Feb Mercury Concentration (mg-kg)	Analysis (Completed May 2014)	
						Total Mercury (by CVAF)	Elemental Mercury (Argon purged)
Phase 2 Sample Locations	WS1	SO-WS1-190214	0.7-0.8	19/02/2014	15.70	X	X
	WS3	SO-WS3-190214	0.7-0.8	19/02/2014	2.30	X	X
		SO-WS3-190214	1.0-1.1	19/02/2014	NA	X	X
	WS4	SO-WS4-180214	0.7-0.8	18/02/2014	1.20	X	X
	WS12	SO-WS12-190214	0.8-0.9	19/02/2014	1.80	X	X
	WS17	SO-WS17-180214	1.3-1.4	18/02/2014	NA	X	X
	WS19	SO-WS19-170214	0.7-0.8	17/02/2014	47.10	X	X
	WS20	SO-WS20-170214	0.6-0.7	17/02/2014	3.60	X	X
	WS21	SO-WS21-170214	0.7-0.8	17/02/2014	10.20	X	X
	WS24	SO-WS24-180214	0.9-1.0	18/02/2014	2.70	X	X
	WS25	SO-WS25-180214	0.6-0.7	18/02/2014	0.40	X	X
	WS28	SO-WS28-180214	0.6-0.7	18/02/2014	0.30	X	X
	WS29	SO-WS29-190214	0.7-0.8	19/02/2014	3.30	X	X
	WS30	SO-WS30-180214	0.6-0.7	18/02/2014	8.10	X	X
	WS33	SO-WS33-190214	0.5-0.6	19/02/2014	0.10	X	X
	WS36	SO-WS36-190214	0.8-0.9	19/02/2014	0.10	X	X
						Total:	16 samples

Table 2: Groundwater Sample Inventory

Sample Information			Analysis						
	Borehole	Sample Date	TPH CWG	VOC	PAH	Metals	Cr VI	Na	K
Phase 2A Sample Locations (Decembe	BH1	04/12/2013	X	X	X	X	X		
	BH2	04/12/2013	X	X	X	X	X		
	BH3	03/12/2013	X	X	X	X	X		
	BH5	03/12/2013	X	X	X	X	X		
	BH6	03/12/2013	X	X	X	X	X		
	BH7	04/12/2013	X	X	X	X	X		
	BH8	03/12/2013	X	X	X	X	X		
	BH9	03/12/2013	X	X	X	X	X		
	Duplicate	04/12/2013	X	X	X	X	X		
	Nestlé Groundwater Abstraction	04/12/2013	X	X	X	X	X		
Phase 2B Sample Locations (February 2014)	BH1	27/02/2014	X	X	X	X*	X		
	BH2	27/02/2014	X	X	X	X*	X		
	BH3	27/02/2014	X	X	X	X*	X		
	BH5	27/02/2014	X	X	X	X*	X		
	BH6	27/02/2014	X	X	X	X*	X		
	BH7	27/02/2014	X	X	X	X*	X		
	BH8	27/02/2014	X	X	X	X*	X	X	X
	BH9	27/02/2014	X	X	X	X*	X		
	WS17	27/02/2014	X	X	X	X*	X		
	WS22	27/02/2014	X	X	X	X*	X		
	WS28	28/02/2014	X	X	X	X*	X		
	WS36	27/02/2014	X	X	X	X*	X		
	Duplicate	28/02/2014	X	X	X	X*	X		
	Nestlé Groundwater Abstraction	28/02/2014	X	X	X	X*	X		

Notes:
TPH CWG: Total Petroleum Hydrocarbons Criteria Working Group, analysis by GC-FID
VOC: Volatile Organic Compounds, analysis by GC-MS
PAH: USEPA list of 16 priority Polycyclic Aromatic Hydrocarbons, analysis by GC-MS
Metals include: As, Cd, Cr, Cu, Pb, Hg, Ni Se, Zn, analysis by ICP-OES
Cr VI: Hexavalent Chromium, automatic photometric analysis
*Low level Mercury by Cold Vapour Atomic Fluorescence

Table 2b: Follow-on Analysis Groundwater Sample Inventory

Sample Information			Analysis					
	Borehole	Sample Date	PAH	Metals (CLEA Full Low)	Hex Cr Low	HG CVAF*	Na	K
Phase 2 Sample Locations (May 2014)	BH1	28/05/2014	X	X	X	X	X	X
	BH2	28/05/2014	X	X	X	X	X	X
	BH3	28/05/2014	X	X	X	X	X	X
	BH4	28/05/2014	X	X	X	X	X	X
	BH5	28/05/2014	X	X	X	X	X	X
	BH6	28/05/2014	X	X	X	X	X	X
	BH7	28/05/2014	X	X	X	X	X	X
	BH8	28/05/2014	X	X	X	X	X	X
	BH9	28/05/2014	X	X	X	X	X	X
	WS1	27/05/2014	X	X	X	X	X	X
	WS17	28/05/2014	X	X	X	X	X	X
	WS22	28/05/2014	X	X	X	X	X	X
	WS28	28/05/2014	X	X	X	X	X	X
	WS36	28/05/2014	X	X	X	X	X	X

Notes:
PAH: USEPA list of 16 priority Polycyclic Aromatic Hydrocarbons, analysis by GC-MS
Metals include: As, Cd, Cr, Cu, Pb, Hg, Ni Se, Zn, analysis by ICPOES / Kone analyser
Cr VI: Hexavalent Chromium, Kone analyser
*Low level Mercury by Cold Vapour Atomic Fluorescence

Table 3: Groundwater Elevations

Nestlé Hayes Groundwater Sampling: 04 December 2013

BH	DTGW mbct	DTB mbct	Reference Elevation mAOD	Water Level mAOD
1	0.610	3.860	30.47	29.86
2	0.915	3.880	30.50	29.59
3	0.775	3.355	30.06	29.29
5	1.245	4.113	29.20	27.96
6	1.470	3.930	30.06	28.59
7	1.415	5.000	31.06	29.65
8	0.945	4.270	31.06	30.12
9	2.785	5.065	31.15	28.37
River Crane	-	-	24.38	24.480

Nestlé Hayes Groundwater Sampling: February 28 2014

Location	DTGW mbct	DTB mbct	Reference Elevation mAOD	Water Level mAOD
WS1	1.381	2.042	30.16	28.779
WS3	0.620	1.696	31.20	30.580
WS4	DRY	1.826	31.19	<29.364
WS13	0.762	1.62	31.14	30.378
WS17	0.553	1.826	31.18	30.627
WS22	0.596	1.785	30.34	29.744
WS33	1.350	1.61	31.27	29.920
WS25	0.587	1.695	30.40	29.813
WS28	1.101	1.832	29.66	28.559
WS36	0.518	2.114	30.94	30.422
BH1	0.532	3.853	30.47	29.938
BH2	0.657	3.852	30.50	29.843
BH3	0.651	3.352	30.06	29.409
BH4	1.052	3.03	29.47	28.418
BH5	1.183	4.114	29.20	28.017
BH6	1.359	3.931	30.06	28.701
BH7	1.247	4.858	31.06	29.813
BH8	0.835	4.235	31.06	30.225
BH9	2.420	5.071	31.15	28.730
Canal	1.29	-	30.77	29.480

Table 3: Groundwater Elevations

Nestlé Hayes Groundwater Sampling: May 28 2014

Location	DTGW mbct	DTB mbct	Reference Elevation mAOD	Water Level mAOD
WS1	1.311	2.042	30.16	28.849
WS3	0.580	1.696	31.20	30.620
WS4	DRY	1.826	31.19	<29.364
WS13	0.867	1.62	31.14	30.273
WS17	0.553	1.826	31.18	30.627
WS22	0.540	1.785	30.34	29.800
WS33	1.364	1.61	31.27	29.906
WS25	0.514	1.695	30.40	29.886
WS28	1.107	1.832	29.66	28.553
WS36	0.277	2.114	30.94	30.663
BH1	0.546	3.853	30.47	29.924
BH2	0.640	3.852	30.50	29.860
BH3	0.670	3.352	30.06	29.390
BH4	1.042	3.03	29.47	28.428
BH5	1.145	4.114	29.20	28.055
BH6	1.354	3.931	30.06	28.706
BH7	1.266	4.858	31.06	29.794
BH8	0.845	4.235	31.06	30.215
BH9	2.569	5.071	31.15	28.581
Canal	1.32	-	30.77	29.450

Notes:

DTGW	Depth to groundwater
DTB	Depth to base
mbct	metres below well casing top
mAOD	meteres above UK Ordnance Datum
Canal**	measured March 2014

Table 4: Groundwater Monitoring
Field Data

Nestlé Hayes Groundwater Sampling: December 2013

BH	Date	DTB mbct	Screen design depth mbct	Base of sampling tube mbct	pH (pH units)	Sp. EC (mS/cm)	ORP (mV)	Temp (°C)	DO (mg/l)	Notes
1	04/12/2013	3.860	2.0 - 4.0	3.00	7.07	1.300	-70.0	13.00	0.60	Rental YSI cable fault/possible battery low power. Approximate parameters. Very slightly turbid with very pale brown tint. No discernible odour.
2	04/12/2013	3.880	1.5 - 4.0	2.75	7.26	0.764	61.2	11.54	0.96	Clear, colourless. No discernible odour.
3	03/12/2003	3.355	1.3 - 3.5	2.50	6.84	1.380	56.1	12.72	1.93	Very slightly turbid grey/brown. No discernible odour. DO falling - 1.4 mg/l post sampling.
5	03/12/2013	4.113	2.4 - 4.2	3.00	6.77	1.393	-27.1	13.80	1.77	Clear, colourless. No discernible odour.
6	03/12/2013	3.930	1.5 - 4.0	2.75	6.75	0.980	41.0	13.00	1.37	Clear, colourless. No discernible odour.
7	04/12/2013	5.000	1.4 - 5.4	3.40	6.95	0.746	-2.3	13.63	0.72	Slightly turbid light brown. No discernible odour.
8	03/12/2013	4.270	2.5 - 4.5	3.50	6.77	2.545	21.6	13.07	0.72	Very slightly turbid grey/brown. No discernible odour.
9	03/12/2013	5.065	1.2 - 5.3	3.30	7.05	1.309	31.9	12.65	0.47	Clear, colourless. No discernible odour.
Nestlé Abstraction Borehole	04/12/2013	-	-	Sampled from rising main	8.14	1.05	-56.5	10.54	5.56	Parameters taken from bucket, after slight agitation of probes for 1 minute. Clear, colourless. No discernible odour.

Nestlé Hayes Groundwater Sampling: February 2014

BH	Date	DTB mbct	Screen design depth mbct	Base of sampling tube mbct	pH (pH units)	Sp. EC (mS/cm)	ORP (mV)	Temp (°C)	DO (mg/l)	Notes
BH1	27/02/2014	3.860	2.0 - 4.0	3.0	8.92	0.742	-148.8	14.70	0.12	Yellow tint, some grey flake like fine particles.
BH2	27/02/2014	3.880	1.5 - 4.0	3.0	8.47	0.432	-130.2	9.3	0.22	Clear, no colour, NDO.
BH4	27/02/2014	3.030	1.5 - 3.1	2.2	7.71	1.746	-77.6	10.3	0.38	Clear, no colour, NDO.
BH5	27/02/2014	4.113	2.4 - 4.2	3.2	7.68	1.067	-80.2	10.70	0.32	No colour with light orange fine particles, NDO.
BH8	27/02/2014	4.270	2.5 - 4.5	3.4	9.71	1.228	-197.5	11.1	0.24	Very slight yellow tint, clear, NDO.
BH9	27/02/2014	5.065	1.2 - 5.3	4.1	7.59	0.932	-78.5	9.8	0.31	Clear, no colour, NDO.
WS17	27/02/2014	1.826	0.5 - 2.0	1.9	7.85	0.538	108.9	8.2	0.42	No colour, slightly turbid, NDO.
WS22	27/02/2014	1.743	0.5 - 2.0	1.9	9.59	1.450	130.8	9.6	5.04	Light brown slightly turbid.
WS28	28/02/2014	1.832	0.5 - 2.0	1.9	7.78	1.761	-113.1	10.1	0.56	Clear, no colour, slightly reducing odour.
WS36	27/02/2014	2.114	0.5 - 2.1	2.0	7.37	1.293	145.9	11.8	0.38	Light brown/yellow very slightly turbid, NDO.
Nestlé Abstraction Borehole	28/02/2014	-	-	Sampled from rising main	8.57	1.042	130	12.2	1.92	Parameters taken from bucket, slight agitation of probes. Clear, colourless. No discernible odour.

Table 4: Groundwater Monitoring
Field Data

Nestlé Hayes Groundwater Sampling: May 2014

BH	Date	DTB mbct	Screen design depth mbct	Base of sampling tube mbct	pH (pH units)	Sp. EC (mS/cm)	ORP (mV)	Temp (°C)	DO (mg/l)	Notes
BH1	28/05/2014	3.860	2.0 - 4.0	3.0	9.23	0.800	-187.0	16.50	0.14	Clear, yellow tint, reducing odour
BH1 Duplicat	28/05/2014	3.880	1.5 - 4.0	3.0	9.21	0.790	-184.9	16.5	0.13	Clear, yellow tint, reducing odour
BH2	28/05/2014	3.880	1.5 - 4.0	3.0	7.73	0.540	-149.7	12.9	0.19	Clear, no colour, NDO
BH3	28/05/2014	3.355	1.3 - 3.5	2.5	6.95	1.280	-56	16	0.28	Clear, no colour, NDO
BH4	28/05/2014	3.030	1.5 - 3.1	2.0	6.92	2.320	-102.9	14	0.25	Clear, no colour, slightly reducing odour
BH5	28/05/2014	4.113	2.4 - 4.2	3.0	6.94	1.530	-95.8	13.87	0.07	Colourless, slightly opaque with some large, pale suspended particles, NDO, no sheen
BH6	28/05/2014	3.930	1.5 - 4.0	2.8	6.81	0.740	79.6	15.30	0.95	Clear, no colour, NDO
BH7	28/05/2014	5.000	1.4 - 5.4	3.9	8.03	1.590	33.5	13.60	0.91	Clear, no colour, NDO
BH8	28/05/2014	4.270	2.5 - 4.5	3.0	9.23	1.700	14.9	13.8	0.19	Clear, very slight yellow tint, NDO
BH9	27/05/2014	5.065	1.2 - 5.3	4.0	7.02	1.100	-58.1	13.2	0.37	Clear, no colour, NDO
WS1	28/05/2014	2.042	0.5-2.0	1.5	6.93	0.955	87.5	16.46	3.29	Light brown, turbid with black suspended particles, NDO, no sheen
WS17	28/05/2014	1.826	0.5 - 2.0	1.5	7.72	0.649	12.9	16.15	0.23	Very light brown, very slightly opaque, NDO
WS22	28/05/2014	1.743	0.5 - 2.0	1.5	9.87	1.187	39.8	15.13	4.20	Water is brown, turbid, NDO, slight sheen on surface
WS28	28/05/2014	1.832	0.5 - 2.0	1.5	6.8	2.339	-132.3	17.54	0.10	Light brown, some fine black suspended sediment, slightly reducing ordour, sheen on water surface
WS36	28/05/2014	2.114	0.5 - 2.1	1.5	7.69	0.981	-137.1	15.16	0.01	Light brown, slightly opaque, chemical odour, no sheen

DTB	Depth to base of monitoring well
mbct	metres below well casing top
Sp. EC	Specific electrical conductivity (relative to 25°C)
ORP	Oxidation-reduction potential
DO	Dissolved Oxygen
NDO	No discernible odour
NVO	No visual nor olfactory evidence

Table 5a: Ground Gas Monitoring Data

Nestlé Hayes Ground Gas Sampling: February 2014

Location	Flow (l/h)	DP (Pa)	AP (mbar)	Purge duration (mins)	CH_4 (%)	CO_2 (%)	O_2 (%)	H_2S (ppm)	CO (ppm)
WS1	0.0	0	999	10	0.0	0.4	19.2	0	6
WS3	0.0	0	1000	5	93.5	6.6	0.0	0	0
WS4	0.0	0	1000	10	0.0	0.5	20.0	0	0
WS13	0.0	0	1001	10	0.0	0.1	20.1	0	0
WS17	0.0	0	999	10	0.0	0.1	20.6	0	0
WS22	0.0	0	1000	15	0.0	0.0	20.1	0	0
WS25	0.0	0	998	10	0.0	0.1	20.5	0	0
WS28	0.0	0	1000	10	0.0	1.1	19.2	0	0
WS33	0.0	0	1000	10	0.0	0.3	20.2	0	0
WS36	0.0	0	999	10	0.0	0.1	20.7	0	0

Nestlé Hayes Ground Gas Sampling: May 27 2014

Location	Flow (l/h)	DP (Pa)	AP (mbar)	Purge duration (mins)	CH_4 (%)	CO_2 (%)	O_2 (%)	H_2S (ppm)	CO (ppm)
WS1	0.0	0	1007	1	0.0	0.1	20.8	0	0
WS3	0.0	0	1008	1	0.0	15.0	0.6	0	0
WS4	0.0	0	1008	1	0.0	2.3	18.4	0	0
WS13	0.0	0	1007	1	0.0	0.4	18.8	0	0
WS17	0.0	0	1008	1	0.0	0.1	20.8	0	0
WS22	0.0	0	1008	1	0.0	0.1	20.3	0	0
WS25	0.0	0	1007	1	0.0	0.1	20.3	0	0
WS28	0.0	0	1008	1	0.0	4.1	15.1	0	0
WS33	0.0	0	1007	1	0.0	0.4	20.5	0	0
WS36	0.0	0	1007	1	0.0	0.1	20.7	0	0

Nestlé Hayes Ground Gas Sampling: May 28 2014

Location	Flow (l/h)	DP (Pa)	AP (mbar)	Purge duration (mins)	CH_4 (%)	CO_2 (%)	O_2 (%)	H_2S (ppm)	CO (ppm)
WS3	0.0	0	1006	1	0.0	0.1	20.4	0	0
WS4	0.0	0	1005	1	0.0	0.1	20.5	0	0
WS13	0.0	0	1005	1	0.0	0.1	20.6	0	0
WS28	0.0	0	1005	1	0.0	0.1	20.6	0	0

Notes: 1

DP Differential pressure

AP Atmospheric pressure

Typical atmospheric composition:

O_2 (%)	20.9
CO_2 (%)	0.04
CH_4 (%)	2E-04

Table 5b: Quantitative Risk Assessment of Potential Pollutant Linkages for Ground Gas

Nestlé Hayes Ground Gas Sampling: February 2014

Location	Flow (l/h)	DP (Pa)	AP (mbar)	CH_4 (%)	CO_2 (%)	O_2 (%)	H_2S (ppm)	CO (ppm)
WS1	<0.5	0	999	0.0	0.4	19.2	0	6
WS4	<0.5	0	1000	0.0	0.5	20.0	0	0
WS13	<0.5	0	1001	0.0	<0.3	20.1	0	0
WS17	<0.5	0	999	0.0	<0.3	20.6	0	0
WS22	<0.5	0	1000	0.0	<0.3	20.1	0	0
WS25	<0.5	0	998	0.0	<0.3	20.5	0	0
WS28	<0.5	0	1000	0.0	1.1	19.2	0	0
WS33	<0.5	0	1000	0.0	0.3	20.2	0	0
WS36	<0.5	0	999	0.0	<0.3	20.7	0	0

Nestlé Hayes Ground Gas Sampling: May 27 2014

Location	Flow (l/h)	DP (Pa)	AP (mbar)	CH_4 (%)	CO_2 (%)	O_2 (%)	H_2S (ppm)	CO (ppm)
WS1	<0.5	0	1007	<0.3	<0.3	20.8	0	0
WS3	<0.5	0	1008	<0.3	15.0	0.6	0	0
WS4	<0.5	0	1008	<0.3	2.3	18.4	0	0
WS13	<0.5	0	1007	<0.3	0.4	18.8	0	0
WS17	<0.5	0	1008	<0.3	<0.3	20.8	0	0
WS22	<0.5	0	1008	<0.3	<0.3	20.3	0	0
WS25	<0.5	0	1007	<0.3	<0.3	20.3	0	0
WS28	<0.5	0	1008	<0.3	4.1	15.1	0	0
WS33	<0.5	0	1007	<0.3	0.4	20.5	0	0
WS36	<0.5	0	1007	<0.3	<0.3	20.7	0	0

Nestlé Hayes Ground Gas Sampling: May 28 2014

Location	Flow (l/h)	DP (Pa)	AP (mbar)	CH_4 (%)	CO_2 (%)	O_2 (%)	H_2S (ppm)	CO (ppm)
WS3	<0.5	0	1006	<0.3	<0.3	20.4	0	0
WS4	<0.5	0	1005	<0.3	<0.3	20.5	0	0
WS13	<0.5	0	1005	<0.3	<0.3	20.6	0	0
WS28	<0.5	0	1005	<0.3	<0.3	20.6	0	0

Gas Screening Value (GSV) (litres/hr) = borehole flow rate (litres/hr) x gas concentration (% v/v)
(worst-case flow rates and maximum gas concentrations)
Where no flow is detected, instrument limit of detection is used
Where no concentration is detected, instrument limit of detection is used

		Risk Classification
CH_4 GSV	0.0015	Very Low Risk
CO_2 GSV	0.075	Low Risk

CH_4 = 0.003 x 0.5
CO_2 = 0.011 x 0.5

Table 6a: Soil Analytical Results Screening for Human Health GAC - Commercial

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Commercial GAC 1% SOM	BH1	BH2	BH3	BH3-FOC	BH5	BH6-FOC	BH7	BH8	BH8-FOC	BH9	BH9-FOC	WS1	WS2	WS2	WS3	WS4
					0.9-1.0m	1.7-1.8m	1.0-1.1m	3.0m	0.9m	3.0m	1.6-1.7m	1.85-1.9m	3.5-3.6m	1.2-1.3m	3.0m	0.7-0.8m	0.9-1.0m	1.2-1.3m	0.7-0.8m	0.7-0.8m
Metals & Metalloids																				
Arsenic	mg/kg	<0.5	NR	640	11.3	14.4	13.8	NA	14.7	NA	8.4	7.9	NA	12.9	NA	13.2	11.2	NA	22.1	21
Cadmium	mg/kg	<0.1	NR	230	0.1	<0.1	<0.1	NA	0.1	NA	<0.1	<0.1	NA	<0.1	NA	0.4	<0.1	NA	0.5	0.5
Hexavalent Chromium	mg/kg	<0.3	NR	35	<0.3	<0.3	<0.3	NA	<0.3	NA	<0.3	<0.3	NA	<0.3	NA	<0.3	<0.3	NA	<0.3	<0.3
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	8840	22.6	133.6	33.9	NA	24.9	NA	20.2	19.6	NA	22.2	NA	23.4	41.8	NA	25.8	27.9
Copper	mg/kg	<1	NR	71700	7	<1	16	NA	48	NA	6	6	NA	12	NA	43	19	NA	96	65
Lead	mg/kg	<5	NR	750	13	6	17	NA	188	NA	5	8	NA	24	NA	254	40	NA	290	239
Inorganic Mercury	mg/kg	<0.1	NR	3600	11.8	<0.1	0.1	NA	1.5	NA	0.2	2.1	NA	4.2	NA	15.7	0.2	NA	2.3	1.2
Elemental Mercury	mg/kg	<0.00002	4.31	18.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00032	NA	NA	0.00837	0.03501
Nickel	mg/kg	<0.7	NR	1800	20.4	23.3	37	NA	28.3	NA	16.1	16.8	NA	18.6	NA	16.6	21.4	NA	18	23.1
Zinc	mg/kg	<5	NR	665000	45	27	60	NA	117	NA	22	28	NA	34	NA	158	69	NA	125	118
pH	pH units	<0.01	NR	NA	9.33	7.87	7.96	NA	8.19	NA	8.26	8.58	NA	8.07	NA	8.28	NA	NA	7.85	NA
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	mg/kg	<0.03 - <0.04	80	200	<0.027	<0.027	<0.027	NA	<0.027	NA	<0.027	<0.027	NA	<0.027	NA	0.09	<0.04	NA	0.05	0.08
Acenaphthylene	mg/kg	<0.03	90	#N/A	<0.03	<0.03	<0.03	NA	0.05	NA	<0.03	<0.03	NA	<0.03	NA	0.11	<0.03	NA	0.08	0.13
Acenaphthene	mg/kg	<0.05	60	85000	<0.05	<0.05	<0.05	NA	0.15	NA	<0.05	<0.05	NA	0.1	NA	0.11	<0.05	NA	0.06	0.15
Fluorene	mg/kg	<0.04	30	64000	<0.04	<0.04	<0.04	NA	0.14	NA	<0.04	<0.04	NA	0.35	NA	0.12	<0.04	NA	<0.04	0.15
Phenanthrene	mg/kg	<0.03	40	22000	0.08	<0.03	<0.03	NA	1.29	NA	<0.03	<0.03	NA	0.83	NA	0.93	<0.03	NA	0.47	1.89
Anthracene	mg/kg	<0.04	1	530000	<0.04	<0.04	<0.04	NA	0.28	NA	<0.04	<0.04	NA	<0.04	NA	0.32	<0.04	NA	0.1	0.61
Fluoranthene	mg/kg	<0.03	20	23000	0.07	<0.03	0.06	NA	2.04	NA	<0.03	<0.03	NA	0.07	NA	2.41	<0.03	NA	0.89	3.75
Pyrene	mg/kg	<0.03	2	54000	0.05	<0.03	0.05	NA	1.67	NA	<0.03	<0.03	NA	0.1	NA	***2.02***	<0.03	NA	0.76	***3.01***
Benzo(a)anthracene	mg/kg	<0.06	2	90	<0.06	<0.06	<0.06	NA	0.87	NA	<0.06	<0.06	NA	<0.06	NA	1.09	<0.06	NA	0.46	1.52
Chrysene	mg/kg	<0.02	0.4	140	<0.02	<0.02	0.04	NA	***0.93***	NA	<0.02	<0.02	NA	0.06	NA	***1.3***	<0.02	NA	***0.53***	***1.63***
Benzo(a)pyrene	mg/kg	<0.04	1	14	<0.04	<0.04	<0.04	NA	0.98	NA	<0.04	<0.04	NA	<0.04	NA	***1.49***	<0.04	NA	0.7	***1.91***
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	60	<0.04	<0.04	<0.04	NA	***0.63***	NA	<0.04	<0.04	NA	<0.04	NA	***0.84***	<0.04	NA	***0.37***	***1.07***
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	13	<0.04	<0.04	<0.04	NA	<0.04	NA	<0.04	<0.04	NA	<0.04	NA	***0.12***	<0.04	NA	***0.06***	***0.16***
Benzo(ghi)perylene	mg/kg	<0.04	0.02	650	<0.04	<0.04	<0.04	NA	***0.57***	NA	<0.04	<0.04	NA	<0.04	NA	***0.91***	<0.04	NA	***0.37***	***1.01***
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	100	<0.05	<0.05	<0.05	NA	***1.07***	NA	<0.05	<0.05	NA	<0.05	NA	***1.58***	<0.05	NA	***0.7***	***1.99***
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	140	<0.02	<0.02	<0.02	NA	0.42	NA	<0.02	<0.02	NA	<0.02	NA	0.62	<0.02	NA	0.27	0.78
Concentration > GAC	200																			
Concentration > Saturation Limit	*200*																			
Volatile Organic Compounds (VOCs)																				
Toluene	µg/kg	<3 - <5	900000	59000000	13	<3	5	NA	43	NA	<3	<3	NA	<3	NA	<3	NA	7	<3	NA
Tetrachloroethene (PCE)	µg/kg	<3	424000	130000	<3	<3	<3	NA	<3	NA	<3	<3	NA	<3	NA	<3	NA	<3	<3	NA
Ethylbenzene	µg/kg	<3 - <5	500000	16800	33	<3	<3	NA	<4	NA	<3	<3	NA	<4	NA	<4	NA	<3	<3	NA
Xylenes	µg/kg	<8 - <10	500000	6220000	554	<9	<9	<9	9	NA	<9	<9	NA	<9	NA	<9	NA	<9	<9	NA
Isopropylbenzene	µg/kg	<3	390000	1400000	29	<3	<3	NA	<3	NA	<3	<3	NA	22	NA	<3	NA	<3	<3	NA
Propylbenzene	µg/kg	<4	402000	4100000	80	<4	<4	NA	<4	NA	<4	<4	NA	43	NA	<4	NA	<4	<4	NA
1,3,5-Trimethylbenzene	µg/kg	<3	557000	42000	<3	<3	<3	NA	<3	NA	<3	<3	NA	<3	NA	<3	NA	<3	<3	NA
tert-Butylbenzene	µg/kg	<5	435000	4100000	13	<5	<5	NA	<5	NA	<5	<5	NA	12	NA	<5	NA	<5	<5	NA
1,2,4-Trimethylbenzene	µg/kg	<6	557000	42000	<6	<6	<6	NA	<6	NA	<6	<6	NA	<6	NA	<6	NA	<6	<6	NA
sec-Butylbenzene	µg/kg	<4	517000	4100000	142	<4	<4	NA	<4	NA	<4	<4	NA	225	NA	<4	NA	<4	<4	NA
4-Isopropyltoluene	µg/kg	<4	613000	4100000	<4	<4	<4	NA	<4	NA	<4	<4	NA	<4	NA	<4	NA	<4	<4	NA
n-Butylbenzene	µg/kg	<4	349000	4100000	293	<4	<4	NA	<4	NA	<4	<4	NA	203	NA	<4	NA	<4	<4	NA
Petroleum Hydrocarbons C5-C35																				
Aliphatics >C5-C6	mg/kg	<0.1	300	3400	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C6-C8	mg/kg	<0.1	100	8300	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C8-C10	mg/kg	<0.1	80	2100	9.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	6.4	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C10-C12	mg/kg	<0.2	50	10000	***85.9***	NA	NA	NA	NA	NA	<0.2	<0.2	NA	28.1	NA	<0.2	NA	<0.2	<0.2	NA
Aliphatics >C12-C16	mg/kg	<4	20	61000	***233***	NA	NA	NA	NA	NA	<4	<4	NA	***185***	NA	<4	NA	<4	<4	NA
Aliphatics >C16-C35	mg/kg	<14	8	1600000	***359***	NA	NA	NA	NA	NA	<14	<14	NA	***289***	NA	<14	NA	<14	<14	NA
Aromatics >C5-EC7	mg/kg	<0.1	1000	28000	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC7-EC8	mg/kg	<0.1	900	59000	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC8-EC10	mg/kg	<0.1	600	3700	0.6	NA	NA	NA	NA	NA	<0.1	<0.1	NA	0.5	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC10-EC12	mg/kg	<0.2	400	17000	7.6	NA	NA	NA	NA	NA	<0.2	<0.2	NA	6.7	NA	<0.2	NA	<0.2	<0.2	NA
Aromatics >EC12-EC16	mg/kg	<4	200	36000	29	NA	NA	NA	NA	NA	<4	<4	NA	81	NA	<4	NA	<4	<4	NA
Aromatics >EC16-EC21	mg/kg	<7	50	28000	<7	NA	NA	NA	NA	NA	<7	<7	NA	***113***	NA	<7	NA	<7	<7	NA
Aromatics >EC21-EC35	mg/kg	<7	5	28000	***55***	NA	NA	NA	NA	NA	<7	<7	NA	***17***	NA	<7	NA	<7	***11***	NA
TPH Hazard Quotient	--	--	--	1	0.02	NA	NA	NA	NA	NA	0.00	0.00	NA	0.02	NA	0.00	NA	0.00	0.00	NA
Concentration > GAC	200																			
Concentration > Saturation Limit	200																			
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																				
Elemental Mercury = Elemental Mercury results, analysed May 2014																				

Table 6a: Soil Analytical Results Screening for Human Health GAC - Commercial

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Commercial GAC 1% SOM	WS4	WS5	WS6	WS7	WS8	WS9	WS10	WS11	WS12	WS13	WS14	WS15	WS16	WS17	WS17	WS18
					1.6-1.7m	0.7-0.8m	1.0-1.1m	0.7-0.8m	0.8-0.9m	0.3-0.4m	0.7-0.8m	0.6-0.7m	0.8-0.9m	0.7-0.8m	0.8-0.9m	0.4-0.5m	0.9-1.0m	0.9-1.0m	1.3-1.4m	0.4-0.5m
Metals & Metalloids																				
Arsenic	mg/kg	<0.5	NR	640	NA	20.8	12.2	16.2	21.3	37.1	79.8	NA	37.5	12.8	11.3	NA	28	NA	NA	7.7
Cadmium	mg/kg	<0.1	NR	230	NA	<0.1	<0.1	<0.1	<0.1	0.2	0.2	NA	0.8	<0.1	0.2	NA	0.6	NA	NA	0.2
Hexavalent Chromium	mg/kg	<0.3	NR	35	NA	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NA	<0.3	13.8	<0.3	NA	<0.3	NA	NA	<0.3
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	8840	NA	52.7	144.2	61.8	84.1	66.5	86.7	NA	30.1	48	189.5	NA	29.9	NA	NA	22.6
Copper	mg/kg	<1	NR	71700	NA	35	13	34	17	103	188	NA	118	18	17	NA	73	NA	NA	76
Lead	mg/kg	<5	NR	750	NA	146	40	192	20	352	701	NA	286	24	15	NA	321	NA	NA	44
Inorganic Mercury	mg/kg	<0.1	NR	3600	NA	0.5	0.1	0.2	0.4	<0.1	1	NA	1.8	7.3	0.5	NA	0.3	NA	NA	0.1
Elemental Mercury	mg/kg	<0.00002	4.31	18.4	NA	NA	NA	NA	NA	NA	NA	NA	0.04691	NA	NA	NA	NA	NA	0.00042	NA
Nickel	mg/kg	<0.7	NR	1800	NA	24	9	28.4	34.8	20	34.8	NA	24.1	24.2	16.7	NA	23.3	NA	NA	23.1
Zinc	mg/kg	<5	NR	665000	NA	82	35	76	62	89	153	NA	299	69	113	NA	96	NA	NA	168
pH	pH units	<0.01	NR	NA	NA	NA	NA	8.25	NA	10.38	NA	9.63	NA	8.43	8.3	NA	NA	NA	NA	9.01
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	mg/kg	<0.03 - <0.04	80	200	NA	<0.027	<0.04	<0.04	<0.04	<0.027	<0.027	NA	<0.04	<0.027	<0.027	<0.027	NA	NA	NA	1.393
Acenaphthylene	mg/kg	<0.03	90	#N/A	NA	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	NA	<0.03	<0.03	NA	NA	NA	NA	NA	11.17
Acenaphthene	mg/kg	<0.05	60	85000	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	NA	NA	NA	NA	NA	1.37
Fluorene	mg/kg	<0.04	30	64000	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	1.66
Phenanthrene	mg/kg	<0.03	40	22000	NA	0.04	<0.03	<0.03	<0.03	0.14	0.18	NA	<0.03	<0.03	NA	NA	NA	NA	NA	14.04
Anthracene	mg/kg	<0.04	1	530000	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***12.49***
Fluoranthene	mg/kg	<0.03	20	23000	NA	0.05	<0.03	<0.03	<0.03	0.18	0.31	NA	0.04	<0.03	NA	NA	NA	NA	NA	***45.39***
Pyrene	mg/kg	<0.03	2	54000	NA	0.05	<0.03	<0.03	<0.03	0.16	0.3	NA	0.04	<0.03	NA	NA	NA	NA	NA	***79.31***
Benzo(a)anthracene	mg/kg	<0.06	2	90	NA	<0.06	<0.06	<0.06	<0.06	0.07	0.18	NA	<0.06	<0.06	NA	NA	NA	NA	NA	***20.86***
Chrysene	mg/kg	<0.02	0.4	140	NA	0.07	<0.02	<0.02	<0.02	0.11	0.25	NA	0.03	<0.02	NA	NA	NA	NA	NA	***25.85***
Benzo(a)pyrene	mg/kg	<0.04	1	14	NA	<0.04	<0.04	<0.04	<0.04	<0.04	0.15	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***41.47***
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	60	NA	<0.04	<0.04	<0.04	<0.04	<0.04	***0.1***	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***32.51***
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	13	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***3.69***
Benzo(ghi)perylene	mg/kg	<0.04	0.02	650	NA	<0.04	<0.04	<0.04	<0.04	***0.05***	***0.11***	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***30.27***
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	100	NA	0.07	<0.05	<0.05	<0.05	0.1	0.24	NA	<0.05	<0.05	NA	NA	NA	NA	NA	***46.48***
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	140	NA	0.03	<0.02	<0.02	<0.02	0.04	0.1	NA	<0.02	<0.02	NA	NA	NA	NA	NA	***18.07***
Concentration > GAC	200																			
Concentration > Saturation Limit	*200*																			
Volatile Organic Compounds (VOCs)																				
Toluene	µg/kg	<3 - <5	900000	59000000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	11
Tetrachloroethene (PCE)	µg/kg	<3	424000	130000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	<3
Ethylbenzene	µg/kg	<3 - <5	500000	16800	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	18
Xylenes	µg/kg	<8 - <10	500000	6220000	<9	<8	NA	NA	NA	<8	<8	NA	<9	<8	<8	<8	NA	NA	NA	178
Isopropylbenzene	µg/kg	<3	390000	1400000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	17
Propylbenzene	µg/kg	<4	402000	4100000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	37
1,3,5-Trimethylbenzene	µg/kg	<3	557000	42000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	73
tert-Butylbenzene	µg/kg	<5	435000	4100000	<5	<5	NA	NA	NA	<5	<5	NA	<5	<5	<5	<5	NA	NA	NA	<5
1,2,4-Trimethylbenzene	µg/kg	<6	557000	42000	<6	<6	NA	NA	NA	<6	<6	NA	<6	<6	<6	<6	NA	NA	NA	209
sec-Butylbenzene	µg/kg	<4	517000	4100000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	<4
4-Isopropyltoluene	µg/kg	<4	613000	4100000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	103
n-Butylbenzene	µg/kg	<4	349000	4100000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	<4
Petroleum Hydrocarbons C5-C35																				
Aliphatics >C5-C6	mg/kg	<0.1	300	3400	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aliphatics >C6-C8	mg/kg	<0.1	100	8300	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aliphatics >C8-C10	mg/kg	<0.1	80	2100	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	3.2
Aliphatics >C10-C12	mg/kg	<0.2	50	10000	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	NA	NA	NA	***70.7***
Aliphatics >C12-C16	mg/kg	<4	20	61000	<4	<4	NA	NA	NA	NA	NA	NA	NA	<4	***20***	<4	NA	NA	NA	***1062***
Aliphatics >C16-C35	mg/kg	<14	8	1600000	<14	<14	NA	NA	NA	NA	NA	NA	NA	<14	***173***	<14	NA	NA	NA	***6324***
Aromatics >C5-EC7	mg/kg	<0.1	1000	28000	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aromatics >EC7-EC8	mg/kg	<0.1	900	59000	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aromatics >EC8-EC10	mg/kg	<0.1	600	3700	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	0.1
Aromatics >EC10-EC12	mg/kg	<0.2	400	17000	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	NA	NA	NA	<1.2
Aromatics >EC12-EC16	mg/kg	<4	200	36000	<4	<4	NA	NA	NA	NA	NA	NA	NA	<4	<4	<4	NA	NA	NA	***424***
Aromatics >EC16-EC21	mg/kg	<7	50	28000	<7	<7	NA	NA	NA	NA	NA	NA	NA	<7	16	<7	NA	NA	NA	***2050***
Aromatics >EC21-EC35	mg/kg	<7	5	28000	<7	<7	NA	NA	NA	NA	NA	NA	NA	<7	***54***	<7	NA	NA	NA	***7543***
TPH Hazard Quotient	--	--	--	1	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA	NA	NA	0.38
Concentration > GAC	200																			
Concentration > Saturation Limit	200																			
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																				
Elemental Mercury = Elemental Mercury results, analysed May 2014																				

Table 6a: Soil Analytical Results Screening for Human Health GAC - Commercial

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Commercial GAC 1% SOM	WS19	WS20	WS21	WS22	WS23	WS24	WS25	WS27	WS28	WS28	WS29	WS30	WS32	WS33	WS33	WS36	WS36
					0.7-0.8m	0.6-0.7m	0.7-0.8m	0.9-1.0m	0.3-0.4m	0.9-1.0m	0.6-0.7m	0.6-0.7m	0.6-0.7m	1.8-1.9m	0.7-0.8m	0.6-0.7m	0.5-0.6m	0.5-0.6m	1.3-1.4m	0.8-0.9m	1.4-1.5m
Metals & Metalloids																					
Arsenic	mg/kg	<0.5	NR	640	11	6.8	15.1	9.6	6.7	14.1	13.9	6.2	12.1	NA	35.9	9.4	9.8	7.9	8	8.6	NA
Cadmium	mg/kg	<0.1	NR	230	<0.1	<0.1	0.3	<0.1	0.4	0.4	0.1	0.1	0.3	NA	0.2	0.6	<0.1	<0.1	<0.1	0.1	NA
Hexavalent Chromium	mg/kg	<0.3	NR	35	<0.3	<0.3	<0.3	<0.3	<0.3	0.5	<0.3	0.5	<0.3	NA	0.4	<0.3	0.5	<0.3	<0.3	<0.3	NA
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	8840	21.5	12.5	24.5	33.9	10.4	23.6	37.7	13.4	21.7	NA	23.6	28.7	18.6	21.8	15.6	16.2	NA
Copper	mg/kg	<1	NR	71700	19	76	76	17	7	104	29	12	23	NA	281	52	42	14	10	29	NA
Lead	mg/kg	<5	NR	750	22	46	98	14	36	766	69	57	121	NA	372	75	33	24	6	35	NA
Inorganic Mercury	mg/kg	<0.1	NR	3600	47.1	3.6	10.2	<0.1	<0.1	2.7	0.4	<0.1	0.3	NA	3.3	8.1	0.2	0.1	0.2	0.1	NA
Elemental Mercury	mg/kg	<0.00002	4.31	18.4	<0.00002	0.00286	0.03002	NA	NA	<0.00002	<0.00002	NA	0.01448	NA	0.00045	0.00113	NA	0.00087	NA	0.02104	NA
Nickel	mg/kg	<0.7	NR	1800	15.2	9.3	24.5	21.5	6.9	17.2	25.6	10.9	15.7	NA	20.5	24.4	13.8	15.3	13.1	14.1	NA
Zinc	mg/kg	<5	NR	665000	62	68	199	65	85	242	100	37	64	NA	190	277	60	39	20	41	NA
pH	pH units	<0.01	NR	NA	9.3	NA	11.05	NA	11.96	NA	8.24	12	NA	NA	10.74	NA		7.88		9.74	NA
Polycyclic Aromatic Hydrocarbons (PAH)																					
Naphthalene	mg/kg	<0.03 - <0.04	80	200	<0.04	0.46	0.08	<0.04	0.16	0.19	<0.04	<0.04	5.34	NA	0.05	2.3	0.05	<0.04	<0.027	<0.04	NA
Acenaphthylene	mg/kg	<0.03	90	#N/A	<0.03	0.23	<0.03	<0.03	0.05	0.23	<0.03	0.06	24.74	NA	0.08	3.71	0.28	<0.03	<0.03	<0.03	NA
Acenaphthene	mg/kg	<0.05	60	85000	<0.05	0.45	<0.05	<0.05	0.08	0.26	<0.05	<0.05	34.36	NA	<0.05	2.66	0.23	<0.05	<0.05	<0.05	NA
Fluorene	mg/kg	<0.04	30	64000	<0.04	0.49	<0.04	<0.04	0.07	0.26	<0.04	<0.04	***49.14***	NA	<0.04	2.39	0.16	<0.04	<0.04	<0.04	NA
Phenanthrene	mg/kg	<0.03	40	22000	0.08	2.41	0.25	<0.03	0.62	2.69	0.15	0.69	***278.8***	NA	0.2	28.52	4.42	0.06	<0.03	0.11	NA
Anthracene	mg/kg	<0.04	1	530000	<0.04	0.91	0.08	<0.04	0.15	0.74	0.05	0.15	***119.72***	NA	0.06	***12.62***	***1.24***	<0.04	<0.04	<0.04	NA
Fluoranthene	mg/kg	<0.03	20	23000	0.14	2.59	0.34	<0.03	0.84	4.67	0.37	0.96	***398.56***	NA	0.54	***74.67***	8.72	0.13	<0.03	0.2	NA
Pyrene	mg/kg	<0.03	2	54000	0.15	***2.27***	0.31	<0.03	0.81	***3.79***	0.33	0.79	***301.49***	NA	0.5	***71.83***	***7.26***	0.13	<0.03	0.17	NA
Benzo(a)anthracene	mg/kg	<0.06	2	90	0.09	0.97	0.24	<0.06	0.25	1.88	0.2	0.38	***152.22***	NA	0.26	***38.33***	***3.5***	0.11	<0.06	0.11	NA
Chrysene	mg/kg	<0.02	0.4	140	0.08	***1.06***	0.18	<0.02	0.38	***2.1***	0.2	0.37	***128.96***	NA	0.3	***38.44***	***3.14***	0.08	<0.02	0.11	NA
Benzo(a)pyrene	mg/kg	<0.04	1	14	0.09	***1.17***	0.24	<0.04	0.33	***2.57***	0.23	0.37	***136.2***	NA	0.43	***58.55***	***3.14***	0.12	<0.04	0.14	NA
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	60	0.05	***0.77***	***0.13***	<0.04	***0.2***	***1.68***	***0.14***	***0.22***	***74.32***	NA	***0.26***	***36.02***	***2***	***0.06***	<0.04	***0.09***	NA
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	13	<0.04	***0.13***	<0.04	<0.04	<0.04	***0.31***	<0.04	***0.05***	***11.02***	NA	***0.05***	***4.81***	***0.73***	<0.04	<0.04	<0.04	NA
Benzo(ghi)perylene	mg/kg	<0.04	0.02	650	***0.05***	***0.64***	***0.13***	<0.04	***0.21***	***1.75***	***0.15***	***0.21***	***72.29***	NA	***0.27***	***37.72***	***1.88***	***0.06***	<0.04	***0.09***	NA
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	100	0.09	***1.27***	0.23	<0.05	0.4	***2.74***	0.24	0.42	***154.03***	NA	0.47	***60.44***	***3.71***	0.1	<0.05	0.14	NA
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	140	0.04	0.49	0.09	<0.02	0.15	***1.07***	0.09	0.17	***59.9***	NA	0.18	***23.51***	***1.44***	0.04	<0.02	0.06	NA
Concentration > GAC	200																				
Concentration > Saturation Limit	*200*																				
Volatile Organic Compounds (VOCs)																					
Toluene	µg/kg	<3 - <5	900000	59000000	<3	<3	21	<3	<3	NA	<4	NA	NA	15	<4	NA	<3	<3	<3	NA	57
Tetrachloroethene (PCE)	µg/kg	<3	424000	130000	10	<3	<3	<3	<3	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Ethylbenzene	µg/kg	<3 - <5	500000	16800	<3	<3	<3	<3	8	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Xylenes	µg/kg	<8 - <10	500000	6220000	<9	<9	<9	<9	130	<9	<9	NA	NA	<9	<9	NA	<8	<9	<8	NA	<9
Isopropylbenzene	µg/kg	<3	390000	1400000	<3	10	<3	<3	6	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Propylbenzene	µg/kg	<4	402000	4100000	<4	<4	<4	<4	19	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
1,3,5-Trimethylbenzene	µg/kg	<3	557000	42000	<3	<3	<3	<3	64	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
tert-Butylbenzene	µg/kg	<5	435000	4100000	<5	<5	<5	<5	<5	NA	<5	NA	NA	<5	<5	NA	<5	<5	<5	NA	<5
1,2,4-Trimethylbenzene	µg/kg	<6	557000	42000	<6	15	<6	<6	240	NA	<6	NA	NA	<6	<6	NA	<6	<6	<6	NA	<6
sec-Butylbenzene	µg/kg	<4	517000	4100000	<4	<4	<4	<4	<4	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
4-Isopropyltoluene	µg/kg	<4	613000	4100000	<4	22	<4	<4	10	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
n-Butylbenzene	µg/kg	<4	349000	4100000	<4	<4	<4	<4	43	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
Petroleum Hydrocarbons C5-C35																					
Aliphatics >C5-C6	mg/kg	<0.1	300	3400	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C6-C8	mg/kg	<0.1	100	8300	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C8-C10	mg/kg	<0.1	80	2100	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C10-C12	mg/kg	<0.2	50	10000	<0.2	<0.2	<0.2	<0.2	1.7	<0.2	NA	NA	NA	<0.2	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2
Aliphatics >C12-C16	mg/kg	<4	20	61000	<4	<4	<4	<4	***69***	<4	NA	NA	NA	<4	<4	NA	6	<4	<4	NA	<4
Aliphatics >C16-C35	mg/kg	<14	8	1600000	<14	<14	<14	<14	***545***	<14	NA	NA	NA	<14	<14	NA	***154***	<14	<14	NA	<14
Aromatics >C5-EC7	mg/kg	<0.1	1000	28000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC7-EC8	mg/kg	<0.1	900	59000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC8-EC10	mg/kg	<0.1	600	3700	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC10-EC12	mg/kg	<0.2	400	17000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2
Aromatics >EC12-EC16	mg/kg	<4	200	36000	<4	<4	<4	<4	23	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
Aromatics >EC16-EC21	mg/kg	<7	50	28000	<7	<7	<7	<7	***123***	28	NA	NA	NA	<7	<7	NA	32	<7	<7	NA	<7
Aromatics >EC21-EC35	mg/kg	<7	5	28000	<7	<7	<7	<7	***200***	***141***	NA	NA	NA	<7	<7	NA	***150***	<7	<7	NA	<7
TPH Hazard Quotient	--	--	--	1	0.00	0.00	0.00	0.00	0.01	0.01	NA	NA	NA	0.00	0.00	NA	0.01	0.00	0.00	NA	0.00
Concentration > GAC	200																				
Concentration > Saturation Limit	200																				
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																					
Elemental Mercury = Elemental Mercury results, analysed May 2014																					

Table 6b: Soil Analytical Results Screening for Human Health GAC - Residential (No plant uptake)

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Residential GAC 1% SOM	BH1 0.9-1.0m	BH2 1.7-1.8m	BH3 1.0-1.1m	BH3-FOC 3.0m	BH5 0.9m	BH6-FOC 3.0m	BH7 1.6-1.7m	BH8 1.85-1.9m	BH8-FOC 3.5-3.6m	BH9 1.2-1.3m	BH9-FOC 3.0m	WS1 0.7-0.8m	WS2 0.9-1.0m	WS2 1.2-1.3m	WS3 0.7-0.8m	WS4 0.7-0.8m
Metals & Metalloids																				
Arsenic	mg/kg	<0.5	NR	35	11.3	14.4	13.8	NA	14.7	NA	8.4	7.9	NA	12.9	NA	13.2	11.2	NA	22.1	21
Cadmium	mg/kg	<0.1	NR	17.7	0.1	<0.1	<0.1	NA	0.1	NA	<0.1	<0.1	NA	<0.1	NA	0.4	<0.1	NA	0.5	0.5
Hexavalent Chromium	mg/kg	<0.3	NR	4.12	<0.3	<0.3	<0.3	NA	<0.3	NA	<0.3	<0.3	NA	<0.3	NA	<0.3	<0.3	NA	<0.3	<0.3
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	627	22.6	133.6	33.9	NA	24.9	NA	20.2	19.6	NA	22.2	NA	23.4	41.8	NA	25.8	27.9
Copper	mg/kg	<1	NR	6200	7	<1	16	NA	48	NA	6	6	NA	12	NA	43	19	NA	96	65
Lead	mg/kg	<5	NR	NR	13	6	17	NA	188	NA	5	8	NA	24	NA	254	40	NA	290	239
Inorganic Mercury	mg/kg	<0.1	NR	238	11.8	<0.1	0.1	NA	1.5	NA	0.2	2.1	NA	4.2	NA	15.7	0.2	NA	2.3	1.2
Elemental Mercury	mg/kg	<0.00002	4.31	0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00032	NA	NA	0.00837	0.03501
Nickel	mg/kg	<0.7	NR	127	20.4	23.3	37	NA	28.3	NA	16.1	16.8	NA	18.6	NA	16.6	21.4	NA	18	23.1
Zinc	mg/kg	<5	NR	40400	45	27	60	NA	117	NA	22	28	NA	34	NA	158	69	NA	125	118
pH	pH units	<0.01	NR	NA	9.33	7.87	7.96	NA	8.19	NA	8.26	8.58	NA	8.07	NA	8.28	NA	NA	7.85	NA
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	mg/kg	<0.03 - <0.04	80	16.2	<0.027	<0.027	<0.027	NA	<0.027	NA	<0.027	<0.027	NA	<0.027	NA	0.09	<0.04	NA	0.05	0.08
Acenaphthylene	mg/kg	<0.03	90	4120	<0.03	<0.03	<0.03	NA	0.05	NA	<0.03	<0.03	NA	<0.03	NA	0.11	<0.03	NA	0.08	0.13
Acenaphthene	mg/kg	<0.05	60	4130	<0.05	<0.05	<0.05	NA	0.15	NA	<0.05	<0.05	NA	0.1	NA	0.11	<0.05	NA	0.06	0.15
Fluorene	mg/kg	<0.04	30	2920	<0.04	<0.04	<0.04	NA	0.14	NA	<0.04	<0.04	NA	0.35	NA	0.12	<0.04	NA	<0.04	0.15
Phenanthrene	mg/kg	<0.03	40	953	0.08	<0.03	<0.03	NA	1.29	NA	<0.03	<0.03	NA	0.83	NA	0.93	<0.03	NA	0.47	1.89
Anthracene	mg/kg	<0.04	1	23000	<0.04	<0.04	<0.04	NA	0.28	NA	<0.04	<0.04	NA	<0.04	NA	0.32	<0.04	NA	0.1	0.61
Fluoranthene	mg/kg	<0.03	20	974	0.07	<0.03	0.06	NA	2.04	NA	<0.03	<0.03	NA	0.07	NA	2.41	<0.03	NA	0.89	3.75
Pyrene	mg/kg	<0.03	2	2340	0.05	<0.03	0.05	NA	1.67	NA	<0.03	<0.03	NA	0.1	NA	***2.02***	<0.03	NA	0.76	***3.01***
Benzo(a)anthracene	mg/kg	<0.06	2	6.44	<0.06	<0.06	<0.06	NA	0.87	NA	<0.06	<0.06	NA	<0.06	NA	1.09	<0.06	NA	0.46	1.52
Chrysene	mg/kg	<0.02	0.4	10	<0.02	<0.02	0.04	NA	***0.93***	NA	<0.02	<0.02	NA	0.06	NA	***1.3***	<0.02	NA	***0.53***	***1.63***
Benzo(a)pyrene	mg/kg	<0.04	1	1.02	<0.04	<0.04	<0.04	NA	0.98	NA	<0.04	<0.04	NA	<0.04	NA	***1.49***	<0.04	NA	0.7	***1.91***
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	4.35	<0.04	<0.04	<0.04	NA	***0.63***	NA	<0.04	<0.04	NA	<0.04	NA	***0.84***	<0.04	NA	***0.37***	***1.07***
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	0.913	<0.04	<0.04	<0.04	NA	<0.04	NA	<0.04	<0.04	NA	<0.04	NA	***0.12***	<0.04	NA	***0.06***	***0.16***
Benzo(ghi)perylene	mg/kg	<0.04	0.02	46.6	<0.04	<0.04	<0.04	NA	***0.57***	NA	<0.04	<0.04	NA	<0.04	NA	***0.91***	<0.04	NA	***0.37***	***1.01***
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	10.2	<0.05	<0.05	<0.05	NA	***1.07***	NA	<0.05	<0.05	NA	<0.05	NA	***1.58***	<0.05	NA	***0.7***	***1.99***
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	10.2	<0.02	<0.02	<0.02	NA	0.42	NA	<0.02	<0.02	NA	<0.02	NA	0.62	<0.02	NA	0.27	0.78
Concentration > GAC	200																			
Concentration > Saturation Limit	*200*																			
Volatile Organic Compounds (VOCs)																				
Toluene	µg/kg	<3 - <5	900000	607000	13	<3	5	NA	43	NA	<3	<3	NA	<3	NA	<3	NA	7	<3	NA
Tetrachloroethene (PCE)	µg/kg	<3	424000	1030	<3	<3	<3	NA	<3	NA	<3	<3	NA	<3	NA	<3	NA	<3	<3	NA
Ethylbenzene	µg/kg	<3 - <5	500000	167000	33	<3	<3	NA	<4	NA	<3	<3	NA	<4	NA	<4	NA	<3	<3	NA
Xylenes	µg/kg	<8 - <10	500000	53300	554	<9	<9	<9	9	NA	<9	<9	NA	<9	NA	<9	NA	<9	<9	NA
Isopropylbenzene	µg/kg	<3	390000	11700	29	<3	<3	NA	<3	NA	<3	<3	NA	22	NA	<3	NA	<3	<3	NA
Propylbenzene	µg/kg	<4	402000	39900	80	<4	<4	NA	<4	NA	<4	<4	NA	43	NA	<4	NA	<4	<4	NA
1,3,5-Trimethylbenzene	µg/kg	<3	557000	408	<3	<3	<3	NA	<3	NA	<3	<3	NA	<3	NA	<3	NA	<3	<3	NA
tert-Butylbenzene	µg/kg	<5	435000	39900	13	<5	<5	NA	<5	NA	<5	<5	NA	12	NA	<5	NA	<5	<5	NA
1,2,4-Trimethylbenzene	µg/kg	<6	557000	408	<6	<6	<6	NA	<6	NA	<6	<6	NA	<6	NA	<6	NA	<6	<6	NA
sec-Butylbenzene	µg/kg	<4	517000	39900	142	<4	<4	NA	<4	NA	<4	<4	NA	225	NA	<4	NA	<4	<4	NA
4-Isopropyltoluene	µg/kg	<4	613000	39900	<4	<4	<4	NA	<4	NA	<4	<4	NA	<4	NA	<4	NA	<4	<4	NA
n-Butylbenzene	µg/kg	<4	349000	39900	293	<4	<4	NA	<4	NA	<4	<4	NA	203	NA	<4	NA	<4	<4	NA
Petroleum Hydrocarbons C5-C35																				
Aliphatics >C5-C6	mg/kg	<0.1	300	29.8	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C6-C8	mg/kg	<0.1	100	72.7	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C8-C10	mg/kg	<0.1	80	18.8	9.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	6.4	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C10-C12	mg/kg	<0.2	50	92.9	***85.9***	NA	NA	NA	NA	NA	<0.2	<0.2	NA	28.1	NA	<0.2	NA	<0.2	<0.2	NA
Aliphatics >C12-C16	mg/kg	<4	20	745	***233***	NA	NA	NA	NA	NA	<4	<4	NA	***185***	NA	<4	NA	<4	<4	NA
Aliphatics >C16-C35	mg/kg	<14	8	45300	***359***	NA	NA	NA	NA	NA	<14	<14	NA	***289***	NA	<14	NA	<14	<14	NA
Aromatics >C5-EC7	mg/kg	<0.1	1000	263	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC7-EC8	mg/kg	<0.1	900	607	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC8-EC10	mg/kg	<0.1	600	33.2	0.6	NA	NA	NA	NA	NA	<0.1	<0.1	NA	0.5	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC10-EC12	mg/kg	<0.2	400	177	7.6	NA	NA	NA	NA	NA	<0.2	<0.2	NA	6.7	NA	<0.2	NA	<0.2	<0.2	NA
Aromatics >EC12-EC16	mg/kg	<4	200	1250	29	NA	NA	NA	NA	NA	<4	<4	NA	81	NA	<4	NA	<4	<4	NA
Aromatics >EC16-EC21	mg/kg	<7	50	1290	<7	NA	NA	NA	NA	NA	<7	<7	NA	***113***	NA	<7	NA	<7	<7	NA
Aromatics >EC21-EC35	mg/kg	<7	5	1340	***55***	NA	NA	NA	NA	NA	<7	<7	NA	***17***	NA	<7	NA	<7	***11***	NA
TPH Hazard Quotient	--	--	--	1	1.85	NA	NA	NA	NA	NA	0.00	0.00	NA	1.12	NA	0.00	NA	0.00	0.01	NA
Concentration > GAC	200																			
Concentration > Saturation Limit	200																			
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																				
Elemental Mercury = Elemental Mercury results, analysed May 2014																				

Table 6b: Soil Analytical Results Screening for Human Health GAC - Residential (No plant uptake)

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Residential GAC 1% SOM	WS4 1.6-1.7m	WS5 0.7-0.8m	WS6 1.0-1.1m	WS7 0.7-0.8m	WS8 0.8-0.9m	WS9 0.3-0.4m	WS10 0.7-0.8m	WS11 0.6-0.7m	WS12 0.8-0.9m	WS13 0.7-0.8m	WS14 0.8-0.9m	WS15 0.4-0.5m	WS16 0.9-1.0m	WS17 0.9-1.0m	WS17 1.3-1.4m	WS18 0.4-0.5m
Metals & Metalloids																				
Arsenic	mg/kg	<0.5	NR	35	NA	20.8	12.2	16.2	21.3	37.1	79.8	NA	37.5	12.8	11.3	NA	28	NA	NA	7.7
Cadmium	mg/kg	<0.1	NR	17.7	NA	<0.1	<0.1	<0.1	<0.1	0.2	0.2	NA	0.8	<0.1	0.2	NA	0.6	NA	NA	0.2
Hexavalent Chromium	mg/kg	<0.3	NR	4.12	NA	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NA	<0.3	13.8	<0.3	NA	<0.3	NA	NA	<0.3
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	627	NA	52.7	144.2	61.8	84.1	66.5	86.7	NA	30.1	48	189.5	NA	29.9	NA	NA	22.6
Copper	mg/kg	<1	NR	6200	NA	35	13	34	17	103	188	NA	118	18	17	NA	73	NA	NA	76
Lead	mg/kg	<5	NR	NR	NA	146	40	192	20	352	701	NA	286	24	15	NA	321	NA	NA	44
Inorganic Mercury	mg/kg	<0.1	NR	238	NA	0.5	0.1	0.2	0.4	<0.1	1	NA	1.8	7.3	0.5	NA	0.3	NA	NA	0.1
Elemental Mercury	mg/kg	<0.00002	4.31	0.17	NA	NA	NA	NA	NA	NA	NA	NA	0.04691	NA	NA	NA	NA	NA	0.00042	NA
Nickel	mg/kg	<0.7	NR	127	NA	24	9	28.4	34.8	20	34.8	NA	24.1	24.2	16.7	NA	23.3	NA	NA	23.1
Zinc	mg/kg	<5	NR	40400	NA	82	35	76	62	89	153	NA	299	69	113	NA	96	NA	NA	168
pH	pH units	<0.01	NR	NA	NA	NA	NA	8.25	NA	10.38	NA	9.63	NA	8.43	8.3	NA	NA	NA	NA	9.01
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	mg/kg	<0.03 - <0.04	80	16.2	NA	<0.027	<0.04	<0.04	<0.04	<0.027	<0.027	NA	<0.04	<0.027	<0.027	<0.027	NA	NA	NA	1.393
Acenaphthylene	mg/kg	<0.03	90	4120	NA	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	NA	<0.03	<0.03	NA	NA	NA	NA	NA	11.17
Acenaphthene	mg/kg	<0.05	60	4130	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	NA	NA	NA	NA	NA	1.37
Fluorene	mg/kg	<0.04	30	2920	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	1.66
Phenanthrene	mg/kg	<0.03	40	953	NA	0.04	<0.03	<0.03	<0.03	0.14	0.18	NA	<0.03	<0.03	NA	NA	NA	NA	NA	14.04
Anthracene	mg/kg	<0.04	1	23000	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***12.49***
Fluoranthene	mg/kg	<0.03	20	974	NA	0.05	<0.03	<0.03	<0.03	0.18	0.31	NA	0.04	<0.03	NA	NA	NA	NA	NA	***45.39***
Pyrene	mg/kg	<0.03	2	2340	NA	0.05	<0.03	<0.03	<0.03	0.16	0.3	NA	0.04	<0.03	NA	NA	NA	NA	NA	***79.31***
Benzo(a)anthracene	mg/kg	<0.06	2	6.44	NA	<0.06	<0.06	<0.06	<0.06	0.07	0.18	NA	<0.06	<0.06	NA	NA	NA	NA	NA	***20.86***
Chrysene	mg/kg	<0.02	0.4	10	NA	0.07	<0.02	<0.02	<0.02	0.11	0.25	NA	0.03	<0.02	NA	NA	NA	NA	NA	***25.85***
Benzo(a)pyrene	mg/kg	<0.04	1	1.02	NA	<0.04	<0.04	<0.04	<0.04	<0.04	0.15	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***41.47***
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	4.35	NA	<0.04	<0.04	<0.04	<0.04	<0.04	***0.1***	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***32.51***
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	0.913	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***3.69***
Benzo(ghi)perylene	mg/kg	<0.04	0.02	46.6	NA	<0.04	<0.04	<0.04	<0.04	***0.05***	***0.11***	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***30.27***
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	10.2	NA	0.07	<0.05	<0.05	<0.05	0.1	0.24	NA	<0.05	<0.05	NA	NA	NA	NA	NA	***46.48***
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	10.2	NA	0.03	<0.02	<0.02	<0.02	0.04	0.1	NA	<0.02	<0.02	NA	NA	NA	NA	NA	***18.07***
Concentration > GAC	200																			
Concentration > Saturation Limit	*200*																			
Volatile Organic Compounds (VOCs)																				
Toluene	µg/kg	<3 - <5	900000	607000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	11
Tetrachloroethene (PCE)	µg/kg	<3	424000	1030	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	<3
Ethylbenzene	µg/kg	<3 - <5	500000	167000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	18
Xylenes	µg/kg	<8 - <10	500000	53300	<9	<8	NA	NA	NA	<8	<8	NA	<9	<8	<8	<8	NA	NA	NA	178
Isopropylbenzene	µg/kg	<3	390000	11700	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	17
Propylbenzene	µg/kg	<4	402000	39900	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	37
1,3,5-Trimethylbenzene	µg/kg	<3	557000	408	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	73
tert-Butylbenzene	µg/kg	<5	435000	39900	<5	<5	NA	NA	NA	<5	<5	NA	<5	<5	<5	<5	NA	NA	NA	<5
1,2,4-Trimethylbenzene	µg/kg	<6	557000	408	<6	<6	NA	NA	NA	<6	<6	NA	<6	<6	<6	<6	NA	NA	NA	209
sec-Butylbenzene	µg/kg	<4	517000	39900	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	<4
4-Isopropyltoluene	µg/kg	<4	613000	39900	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	103
n-Butylbenzene	µg/kg	<4	349000	39900	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	<4
Petroleum Hydrocarbons C5-C35																				
Aliphatics >C5-C6	mg/kg	<0.1	300	29.8	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aliphatics >C6-C8	mg/kg	<0.1	100	72.7	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aliphatics >C8-C10	mg/kg	<0.1	80	18.8	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	3.2
Aliphatics >C10-C12	mg/kg	<0.2	50	92.9	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	NA	NA	NA	***70.7***
Aliphatics >C12-C16	mg/kg	<4	20	745	<4	<4	NA	NA	NA	NA	NA	NA	NA	<4	***20***	<4	NA	NA	NA	***1062***
Aliphatics >C16-C35	mg/kg	<14	8	45300	<14	<14	NA	NA	NA	NA	NA	NA	NA	<14	***173***	<14	NA	NA	NA	***6324***
Aromatics >C5-EC7	mg/kg	<0.1	1000	263	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aromatics >EC7-EC8	mg/kg	<0.1	900	607	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aromatics >EC8-EC10	mg/kg	<0.1	600	33.2	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	0.1
Aromatics >EC10-EC12	mg/kg	<0.2	400	177	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	NA	NA	NA	<1.2
Aromatics >EC12-EC16	mg/kg	<4	200	1250	<4	<4	NA	NA	NA	NA	NA	NA	NA	<4	<4	<4	NA	NA	NA	***424***
Aromatics >EC16-EC21	mg/kg	<7	50	1290	<7	<7	NA	NA	NA	NA	NA	NA	NA	<7	16	<7	NA	NA	NA	***2050***
Aromatics >EC21-EC35	mg/kg	<7	5	1340	<7	<7	NA	NA	NA	NA	NA	NA	NA	<7	***54***	<7	NA	NA	NA	***7543***
TPH Hazard Quotient	--	--	--	1	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	0.00	0.08	0.00	NA	NA	NA	10.06
Concentration > GAC	200																			
Concentration > Saturation Limit	200																			
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																				
Elemental Mercury = Elemental Mercury results, analysed May 2014																				

Table 6b: Soil Analytical Results Screening for Human Health GAC - Residential (No plant uptake)

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Residential GAC 1% SOM	WS19 0.7-0.8m	WS20 0.6-0.7m	WS21 0.7-0.8m	WS22 0.9-1.0m	WS23 0.3-0.4m	WS24 0.9-1.0m	WS25 0.6-0.7m	WS27 0.6-0.7m	WS28 0.6-0.7m	WS28 1.8-1.9m	WS29 0.7-0.8m	WS30 0.6-0.7m	WS32 0.5-0.6m	WS33 0.5-0.6m	WS33 1.3-1.4m	WS36 0.8-0.9m	WS36 1.4-1.5m
Metals & Metalloids																					
Arsenic	mg/kg	<0.5	NR	35	11	6.8	15.1	9.6	6.7	14.1	13.9	6.2	12.1	NA	35.9	9.4	9.8	7.9	8	8.6	NA
Cadmium	mg/kg	<0.1	NR	17.7	<0.1	<0.1	0.3	<0.1	0.4	0.4	0.1	0.1	0.3	NA	0.2	0.6	<0.1	<0.1	<0.1	0.1	NA
Hexavalent Chromium	mg/kg	<0.3	NR	4.12	<0.3	<0.3	<0.3	<0.3	<0.3	0.5	<0.3	0.5	<0.3	NA	0.4	<0.3	0.5	<0.3	<0.3	<0.3	NA
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	627	21.5	12.5	24.5	33.9	10.4	23.6	37.7	13.4	21.7	NA	23.6	28.7	18.6	21.8	15.6	16.2	NA
Copper	mg/kg	<1	NR	6200	19	76	76	17	7	104	29	12	23	NA	281	52	42	14	10	29	NA
Lead	mg/kg	<5	NR	NR	22	46	98	14	36	766	69	57	121	NA	372	75	33	24	6	35	NA
Inorganic Mercury	mg/kg	<0.1	NR	238	47.1	3.6	10.2	<0.1	<0.1	2.7	0.4	<0.1	0.3	NA	3.3	8.1	0.2	0.1	0.2	0.1	NA
Elemental Mercury	mg/kg	<0.00002	4.31	0.17	<0.00002	0.00286	0.03002	NA	NA	<0.00002	<0.00002	NA	0.01448	NA	0.00045	0.00113	NA	0.00087	NA	0.02104	NA
Nickel	mg/kg	<0.7	NR	127	15.2	9.3	24.5	21.5	6.9	17.2	25.6	10.9	15.7	NA	20.5	24.4	13.8	15.3	13.1	14.1	NA
Zinc	mg/kg	<5	NR	40400	62	68	199	65	85	242	100	37	64	NA	190	277	60	39	20	41	NA
pH	pH units	<0.01	NR	NA	9.3	NA	11.05	NA	11.96	NA	8.24	12	NA	NA	10.74	NA		7.88		9.74	NA
Polycyclic Aromatic Hydrocarbons (PAH)																					
Naphthalene	mg/kg	<0.03 - <0.04	80	16.2	<0.04	0.46	0.08	<0.04	0.16	0.19	<0.04	<0.04	5.34	NA	0.05	2.3	0.05	<0.04	<0.027	<0.04	NA
Acenaphthylene	mg/kg	<0.03	90	4120	<0.03	0.23	<0.03	<0.03	0.05	0.23	<0.03	0.06	24.74	NA	0.08	3.71	0.28	<0.03	<0.03	<0.03	NA
Acenaphthene	mg/kg	<0.05	60	4130	<0.05	0.45	<0.05	<0.05	0.08	0.26	<0.05	<0.05	34.36	NA	<0.05	2.66	0.23	<0.05	<0.05	<0.05	NA
Fluorene	mg/kg	<0.04	30	2920	<0.04	0.49	<0.04	<0.04	0.07	0.26	<0.04	<0.04	***49.14***	NA	<0.04	2.39	0.16	<0.04	<0.04	<0.04	NA
Phenanthrene	mg/kg	<0.03	40	953	0.08	2.41	0.25	<0.03	0.62	2.69	0.15	0.69	***278.8***	NA	0.2	28.52	4.42	0.06	<0.03	0.11	NA
Anthracene	mg/kg	<0.04	1	23000	<0.04	0.91	0.08	<0.04	0.15	0.74	0.05	0.15	***119.72***	NA	0.06	***12.62***	***1.24***	<0.04	<0.04	<0.04	NA
Fluoranthene	mg/kg	<0.03	20	974	0.14	2.59	0.34	<0.03	0.84	4.67	0.37	0.96	***398.56***	NA	0.54	***74.67***	8.72	0.13	<0.03	0.2	NA
Pyrene	mg/kg	<0.03	2	2340	0.15	***2.27***	0.31	<0.03	0.81	***3.79***	0.33	0.79	***301.49***	NA	0.5	***71.83***	***7.26***	0.13	<0.03	0.17	NA
Benzo(a)anthracene	mg/kg	<0.06	2	6.44	0.09	0.97	0.24	<0.06	0.25	1.88	0.2	0.38	***152.22***	NA	0.26	***38.33***	***3.5***	0.11	<0.06	0.11	NA
Chrysene	mg/kg	<0.02	0.4	10	0.08	***1.06***	0.18	<0.02	0.38	***2.1***	0.2	0.37	***128.96***	NA	0.3	***38.44***	***3.14***	0.08	<0.02	0.11	NA
Benzo(a)pyrene	mg/kg	<0.04	1	1.02	0.09	***1.17***	0.24	<0.04	0.33	***2.57***	0.23	0.37	***136.2***	NA	0.43	***58.55***	***3.14***	0.12	<0.04	0.14	NA
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	4.35	0.05	***0.77***	***0.13***	<0.04	***0.2***	***1.68***	***0.14***	***0.22***	***74.32***	NA	***0.26***	***36.02***	***2***	***0.06***	<0.04	***0.09***	NA
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	0.913	<0.04	***0.13***	<0.04	<0.04	<0.04	***0.31***	<0.04	***0.05***	***11.02***	NA	***0.05***	***4.81***	***0.73***	<0.04	<0.04	<0.04	NA
Benzo(ghi)perylene	mg/kg	<0.04	0.02	46.6	***0.05***	***0.64***	***0.13***	<0.04	***0.21***	***1.75***	***0.15***	***0.21***	***72.29***	NA	***0.27***	***37.72***	***1.88***	***0.06***	<0.04	***0.09***	NA
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	10.2	0.09	***1.27***	0.23	<0.05	0.4	***2.74***	0.24	0.42	***154.03***	NA	0.47	***60.44***	***3.71***	0.1	<0.05	0.14	NA
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	10.2	0.04	0.49	0.09	<0.02	0.15	***1.07***	0.09	0.17	***59.9***	NA	0.18	***23.51***	***1.44***	0.04	<0.02	0.06	NA
Concentration > GAC	200																				
Concentration > Saturation Limit	*200*																				
Volatile Organic Compounds (VOCs)																					
Toluene	µg/kg	<3 - <5	900000	607000	<3	<3	21	<3	<3	NA	<4	NA	NA	15	<4	NA	<3	<3	<3	NA	57
Tetrachloroethene (PCE)	µg/kg	<3	424000	1030	10	<3	<3	<3	<3	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Ethylbenzene	µg/kg	<3 - <5	500000	167000	<3	<3	<3	<3	8	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Xylenes	µg/kg	<8 - <10	500000	53300	<9	<9	<9	<9	130	<9	<9	NA	NA	<9	<9	NA	<8	<9	<8	NA	<9
Isopropylbenzene	µg/kg	<3	390000	11700	<3	10	<3	<3	6	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Propylbenzene	µg/kg	<4	402000	39900	<4	<4	<4	<4	19	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
1,3,5-Trimethylbenzene	µg/kg	<3	557000	408	<3	<3	<3	<3	64	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
tert-Butylbenzene	µg/kg	<5	435000	39900	<5	<5	<5	<5	<5	NA	<5	NA	NA	<5	<5	NA	<5	<5	<5	NA	<5
1,2,4-Trimethylbenzene	µg/kg	<6	557000	408	<6	15	<6	<6	240	NA	<6	NA	NA	<6	<6	NA	<6	<6	<6	NA	<6
sec-Butylbenzene	µg/kg	<4	517000	39900	<4	<4	<4	<4	<4	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
4-Isopropyltoluene	µg/kg	<4	613000	39900	<4	22	<4	<4	10	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
n-Butylbenzene	µg/kg	<4	349000	39900	<4	<4	<4	<4	43	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
Petroleum Hydrocarbons C5-C35																					
Aliphatics >C5-C6	mg/kg	<0.1	300	29.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C6-C8	mg/kg	<0.1	100	72.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C8-C10	mg/kg	<0.1	80	18.8	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C10-C12	mg/kg	<0.2	50	92.9	<0.2	<0.2	<0.2	<0.2	1.7	<0.2	NA	NA	NA	<0.2	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2
Aliphatics >C12-C16	mg/kg	<4	20	745	<4	<4	<4	<4	***69***	<4	NA	NA	NA	<4	<4	NA	6	<4	<4	NA	<4
Aliphatics >C16-C35	mg/kg	<14	8	45300	<14	<14	<14	<14	***545***	<14	NA	NA	NA	<14	<14	NA	***154***	<14	<14	NA	<14
Aromatics >C5-EC7	mg/kg	<0.1	1000	263	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC7-EC8	mg/kg	<0.1	900	607	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC8-EC10	mg/kg	<0.1	600	33.2	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC10-EC12	mg/kg	<0.2	400	177	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2
Aromatics >EC12-EC16	mg/kg	<4	200	1250	<4	<4	<4	<4	23	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
Aromatics >EC16-EC21	mg/kg	<7	50	1290	<7	<7	<7	<7	***123***	28	NA	NA	NA	<7	<7	NA	32	<7	<7	NA	<7
Aromatics >EC21-EC35	mg/kg	<7	5	1340	<7	<7	<7	<7	***200***	***141***	NA	NA	NA	<7	<7	NA	***150***	<7	<7	NA	<7
TPH Hazard Quotient	--	--	--	1	0.00	0.00	0.00	0.00	0.42	0.13	NA	NA	NA	0.00	0.00	NA	0.15	0.00	0.00	NA	0.00
Concentration > GAC	200																				
Concentration > Saturation Limit	200																				
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																					
Elemental Mercury = Elemental Mercury results, analysed May 2014																					

Table 6c: Soil Analytical Results Screening for Human Health GAC - Residential (with plant uptake)

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Residential GAC 1% SOM	BH1	BH2	BH3	BH3-FOC	BH5	BH6-FOC	BH7	BH8	BH8-FOC	BH9	BH9-FOC	WS1	WS2	WS2	WS3	WS4
					0.9-1.0m	1.7-1.8m	1.0-1.1m	3.0m	0.9m	3.0m	1.6-1.7m	1.85-1.9m	3.5-3.6m	1.2-1.3m	3.0m	0.7-0.8m	0.9-1.0m	1.2-1.3m	0.7-0.8m	0.7-0.8m
Metals & Metalloids																				
Arsenic	mg/kg	<0.5	NR	32	11.3	14.4	13.8	NA	14.7	NA	8.4	7.9	NA	12.9	NA	13.2	11.2	NA	22.1	21
Cadmium	mg/kg	<0.1	NR	10	0.1	<0.1	<0.1	NA	0.1	NA	<0.1	<0.1	NA	<0.1	NA	0.4	<0.1	NA	0.5	0.5
Chromium (Total)	mg/kg	<0.5	NR	--	22.6	133.6	33.9	NA	24.9	NA	20.2	19.6	NA	22.2	NA	23.4	41.8	NA	25.8	27.9
Hexavalent Chromium	mg/kg	<0.3	NR	4.3	<0.3	<0.3	<0.3	NA	<0.3	NA	<0.3	<0.3	NA	<0.3	NA	<0.3	<0.3	NA	<0.3	<0.3
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	627	22.6	133.6	33.9	NA	24.9	NA	20.2	19.6	NA	22.2	NA	23.4	41.8	NA	25.8	27.9
Copper	mg/kg	<1	NR	2330	7	<1	16	NA	48	NA	6	6	NA	12	NA	43	19	NA	96	65
Lead	mg/kg	<5	NR	450	13	6	17	NA	188	NA	5	8	NA	24	NA	254	40	NA	290	239
Inorganic Mercury	mg/kg	<0.1	NR	238	11.8	<0.1	0.1	NA	1.5	NA	0.2	2.1	NA	4.2	NA	15.7	0.2	NA	2.3	1.2
Elemental Mercury	mg/kg	<0.00002	4.31	0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00032	NA	NA	0.00837	0.03501
Nickel	mg/kg	<0.7	NR	130	20.4	23.3	37	NA	28.3	NA	16.1	16.8	NA	18.6	NA	16.6	21.4	NA	18	23.1
Zinc	mg/kg	<5	NR	3750	45	27	60	NA	117	NA	22	28	NA	34	NA	158	69	NA	125	118
pH	pH units	<0.01	NR	NA	9.33	7.87	7.96	NA	8.19	NA	8.26	8.58	NA	8.07	NA	8.28	NA	NA	7.85	NA
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	mg/kg	<0.03 - <0.04	80	1.5	<0.027	<0.027	<0.027	NA	<0.027	NA	<0.027	<0.027	NA	<0.027	NA	0.09	<0.04	NA	0.05	0.08
Acenaphthylene	mg/kg	<0.03	90	170	<0.03	<0.03	<0.03	NA	0.05	NA	<0.03	<0.03	NA	<0.03	NA	0.11	<0.03	NA	0.08	0.13
Acenaphthene	mg/kg	<0.05	60	210	<0.05	<0.05	<0.05	NA	0.15	NA	<0.05	<0.05	NA	0.1	NA	0.11	<0.05	NA	0.06	0.15
Fluorene	mg/kg	<0.04	30	160	<0.04	<0.04	<0.04	NA	0.14	NA	<0.04	<0.04	NA	0.35	NA	0.12	<0.04	NA	<0.04	0.15
Phenanthrene	mg/kg	<0.03	40	92	0.08	<0.03	<0.03	NA	1.29	NA	<0.03	<0.03	NA	0.83	NA	0.93	<0.03	NA	0.47	1.89
Anthracene	mg/kg	<0.04	1	2300	<0.04	<0.04	<0.04	NA	0.28	NA	<0.04	<0.04	NA	<0.04	NA	0.32	<0.04	NA	0.1	0.61
Fluoranthene	mg/kg	<0.03	20	260	0.07	<0.03	0.06	NA	2.04	NA	<0.03	<0.03	NA	0.07	NA	2.41	<0.03	NA	0.89	3.75
Pyrene	mg/kg	<0.03	2	560	0.05	<0.03	0.05	NA	1.67	NA	<0.03	<0.03	NA	0.1	NA	***2.02***	<0.03	NA	0.76	***3.01***
Benzo(a)anthracene	mg/kg	<0.06	2	3.1	<0.06	<0.06	<0.06	NA	0.87	NA	<0.06	<0.06	NA	<0.06	NA	1.09	<0.06	NA	0.46	1.52
Chrysene	mg/kg	<0.02	0.4	6	<0.02	<0.02	0.04	NA	***0.93***	NA	<0.02	<0.02	NA	0.06	NA	***1.3***	<0.02	NA	***0.53***	***1.63***
Benzo(a)pyrene	mg/kg	<0.04	1	0.83	<0.04	<0.04	<0.04	NA	0.98	NA	<0.04	<0.04	NA	<0.04	NA	***1.49***	<0.04	NA	0.7	***1.91***
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	3.2	<0.04	<0.04	<0.04	NA	***0.63***	NA	<0.04	<0.04	NA	<0.04	NA	***0.84***	<0.04	NA	***0.37***	***1.07***
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	0.76	<0.04	<0.04	<0.04	NA	<0.04	NA	<0.04	<0.04	NA	<0.04	NA	***0.12***	<0.04	NA	***0.06***	***0.16***
Benzo(ghi)perylene	mg/kg	<0.04	0.02	44	<0.04	<0.04	<0.04	NA	***0.57***	NA	<0.04	<0.04	NA	<0.04	NA	***0.91***	<0.04	NA	***0.37***	***1.01***
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	5.6	<0.05	<0.05	<0.05	NA	***1.07***	NA	<0.05	<0.05	NA	<0.05	NA	***1.58***	<0.05	NA	***0.7***	***1.99***
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	8.5	<0.02	<0.02	<0.02	NA	0.42	NA	<0.02	<0.02	NA	<0.02	NA	0.62	<0.02	NA	0.27	0.78
Concentration > GAC	200																			
Concentration > Saturation Limit	*200*																			
Volatile Organic Compounds (VOCs)																				
Toluene	µg/kg	<3 - <5	900000	120000	13	<3	5	NA	43	NA	<3	<3	NA	<3	NA	<3	NA	7	<3	NA
Tetrachloroethene (PCE)	µg/kg	<3	424000	900	<3	<3	<3	NA	<3	NA	<3	<3	NA	<3	NA	<3	NA	<3	<3	NA
Ethylbenzene	µg/kg	<3 - <5	500000	65000	33	<3	<3	NA	<4	NA	<3	<3	NA	<4	NA	<4	NA	<3	<3	NA
Xylenes	µg/kg	<8 - <10	500000	42000	554	<9	<9	<9	9	NA	<9	<9	NA	<9	NA	<9	NA	<9	<9	NA
Isopropylbenzene	µg/kg	<3	390000	11000	29	<3	<3	NA	<3	NA	<3	<3	NA	22	NA	<3	NA	<3	<3	NA
Propylbenzene	µg/kg	<4	402000	34000	80	<4	<4	NA	<4	NA	<4	<4	NA	43	NA	<4	NA	<4	<4	NA
1,3,5-Trimethylbenzene	µg/kg	<3	557000	350	<3	<3	<3	NA	<3	NA	<3	<3	NA	<3	NA	<3	NA	<3	<3	NA
tert-Butylbenzene	µg/kg	<5	435000	34000	13	<5	<5	NA	<5	NA	<5	<5	NA	12	NA	<5	NA	<5	<5	NA
1,2,4-Trimethylbenzene	µg/kg	<6	557000	350	<6	<6	<6	NA	<6	NA	<6	<6	NA	<6	NA	<6	NA	<6	<6	NA
sec-Butylbenzene	µg/kg	<4	517000	34000	142	<4	<4	NA	<4	NA	<4	<4	NA	225	NA	<4	NA	<4	<4	NA
4-Isopropyltoluene	µg/kg	<4	613000	34000	<4	<4	<4	NA	<4	NA	<4	<4	NA	<4	NA	<4	NA	<4	<4	NA
n-Butylbenzene	µg/kg	<4	349000	34000	293	<4	<4	NA	<4	NA	<4	<4	NA	203	NA	<4	NA	<4	<4	NA
Petroleum Hydrocarbons C5-C35																				
Aliphatics >C5-C6	mg/kg	<0.1	300	30	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C6-C8	mg/kg	<0.1	100	73	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C8-C10	mg/kg	<0.1	80	19	9.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	6.4	NA	<0.1	NA	<0.1	<0.1	NA
Aliphatics >C10-C12	mg/kg	<0.2	50	93	***85.9***	NA	NA	NA	NA	NA	<0.2	<0.2	NA	28.1	NA	<0.2	NA	<0.2	<0.2	NA
Aliphatics >C12-C16	mg/kg	<4	20	740	***233***	NA	NA	NA	NA	NA	<4	<4	NA	***185***	NA	<4	NA	<4	<4	NA
Aliphatics >C16-C35	mg/kg	<14	8	45000	***359***	NA	NA	NA	NA	NA	<14	<14	NA	***289***	NA	<14	NA	<14	<14	NA
Aromatics >C5-EC7	mg/kg	<0.1	1000	65	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC7-EC8	mg/kg	<0.1	900	120	<0.1	NA	NA	NA	NA	NA	<0.1	<0.1	NA	<0.1	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC8-EC10	mg/kg	<0.1	600	27	0.6	NA	NA	NA	NA	NA	<0.1	<0.1	NA	0.5	NA	<0.1	NA	<0.1	<0.1	NA
Aromatics >EC10-EC12	mg/kg	<0.2	400	69	7.6	NA	NA	NA	NA	NA	<0.2	<0.2	NA	6.7	NA	<0.2	NA	<0.2	<0.2	NA
Aromatics >EC12-EC16	mg/kg	<4	200	140	29	NA	NA	NA	NA	NA	<4	<4	NA	81	NA	<4	NA	<4	<4	NA
Aromatics >EC16-EC21	mg/kg	<7	50	250	<7	NA	NA	NA	NA	NA	<7	<7	NA	***113***	NA	<7	NA	<7	<7	NA
Aromatics >EC21-EC35	mg/kg	<7	5	890	***55***	NA	NA	NA	NA	NA	<7	<7	NA	***17***	NA	<7	NA	<7	***11***	NA
TPH Hazard Quotient	--	--	--	1	2.13	NA	NA	NA	NA	NA	0.00	0.00	NA	2.06	NA	0.00	NA	0.00	0.01	NA
Concentration > GAC	200																			
Concentration > Saturation Limit	200																			
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																				
Elemental Mercury = Elemental Mercury results, analysed May 2014																				

Table 6c: Soil Analytical Results Screening for Human Health GAC - Residential (with plant uptake)

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Residential GAC 1% SOM	WS4 1.6-1.7m	WS5 0.7-0.8m	WS6 1.0-1.1m	WS7 0.7-0.8m	WS8 0.8-0.9m	WS9 0.3-0.4m	WS10 0.7-0.8m	WS11 0.6-0.7m	WS12 0.8-0.9m	WS13 0.7-0.8m	WS14 0.8-0.9m	WS15 0.4-0.5m	WS16 0.9-1.0m	WS17 0.9-1.0m	WS17 1.3-1.4m	WS18 0.4-0.5m
Metals & Metalloids																				
Arsenic	mg/kg	<0.5	NR	32	NA	20.8	12.2	16.2	21.3	37.1	79.8	NA	37.5	12.8	11.3	NA	28	NA	NA	7.7
Cadmium	mg/kg	<0.1	NR	10	NA	<0.1	<0.1	<0.1	<0.1	0.2	0.2	NA	0.8	<0.1	0.2	NA	0.6	NA	NA	0.2
Chromium (Total)	mg/kg	<0.5	NR	--	NA	52.7	144.2	61.8	84.1	66.5	86.7	NA	30.1	61.8	189.5	NA	29.9	NA	NA	22.6
Hexavalent Chromium	mg/kg	<0.3	NR	4.3	NA	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NA	<0.3	13.8	<0.3	NA	<0.3	NA	NA	<0.3
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	627	NA	52.7	144.2	61.8	84.1	66.5	86.7	NA	30.1	48	189.5	NA	29.9	NA	NA	22.6
Copper	mg/kg	<1	NR	2330	NA	35	13	34	17	103	188	NA	118	18	17	NA	73	NA	NA	76
Lead	mg/kg	<5	NR	450	NA	146	40	192	20	352	701	NA	286	24	15	NA	321	NA	NA	44
Inorganic Mercury	mg/kg	<0.1	NR	238	NA	0.5	0.1	0.2	0.4	<0.1	1	NA	1.8	7.3	0.5	NA	0.3	NA	NA	0.1
Elemental Mercury	mg/kg	<0.00002	4.31	0.17	NA	NA	NA	NA	NA	NA	NA	NA	0.04691	NA	NA	NA	NA	NA	0.00042	NA
Nickel	mg/kg	<0.7	NR	130	NA	24	9	28.4	34.8	20	34.8	NA	24.1	24.2	16.7	NA	23.3	NA	NA	23.1
Zinc	mg/kg	<5	NR	3750	NA	82	35	76	62	89	153	NA	299	69	113	NA	96	NA	NA	168
pH	pH units	<0.01	NR	NA	NA	NA	NA	8.25	NA	10.38	NA	9.63	NA	8.43	8.3	NA	NA	NA	NA	9.01
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	mg/kg	<0.03 - <0.04	80	1.5	NA	<0.027	<0.04	<0.04	<0.04	<0.027	<0.027	NA	<0.04	<0.027	<0.027	<0.027	NA	NA	NA	1.393
Acenaphthylene	mg/kg	<0.03	90	170	NA	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	NA	<0.03	<0.03	NA	NA	NA	NA	NA	11.17
Acenaphthene	mg/kg	<0.05	60	210	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	NA	NA	NA	NA	NA	1.37
Fluorene	mg/kg	<0.04	30	160	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	1.66
Phenanthrene	mg/kg	<0.03	40	92	NA	0.04	<0.03	<0.03	<0.03	0.14	0.18	NA	<0.03	<0.03	NA	NA	NA	NA	NA	14.04
Anthracene	mg/kg	<0.04	1	2300	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***12.49***
Fluoranthene	mg/kg	<0.03	20	260	NA	0.05	<0.03	<0.03	<0.03	0.18	0.31	NA	0.04	<0.03	NA	NA	NA	NA	NA	***45.39***
Pyrene	mg/kg	<0.03	2	560	NA	0.05	<0.03	<0.03	<0.03	0.16	0.3	NA	0.04	<0.03	NA	NA	NA	NA	NA	***79.31***
Benzo(a)anthracene	mg/kg	<0.06	2	3.1	NA	<0.06	<0.06	<0.06	<0.06	0.07	0.18	NA	<0.06	<0.06	NA	NA	NA	NA	NA	***20.86***
Chrysene	mg/kg	<0.02	0.4	6	NA	0.07	<0.02	<0.02	<0.02	0.11	0.25	NA	0.03	<0.02	NA	NA	NA	NA	NA	***25.85***
Benzo(a)pyrene	mg/kg	<0.04	1	0.83	NA	<0.04	<0.04	<0.04	<0.04	<0.04	0.15	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***41.47***
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	3.2	NA	<0.04	<0.04	<0.04	<0.04	<0.04	***0.1***	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***32.51***
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	0.76	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***3.69***
Benzo(ghi)perylene	mg/kg	<0.04	0.02	44	NA	<0.04	<0.04	<0.04	<0.04	***0.05***	***0.11***	NA	<0.04	<0.04	NA	NA	NA	NA	NA	***30.27***
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	5.6	NA	0.07	<0.05	<0.05	<0.05	0.1	0.24	NA	<0.05	<0.05	NA	NA	NA	NA	NA	***46.48***
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	8.5	NA	0.03	<0.02	<0.02	<0.02	0.04	0.1	NA	<0.02	<0.02	NA	NA	NA	NA	NA	***18.07***
Concentration > GAC	200																			
Concentration > Saturation Limit	*200*																			
Volatile Organic Compounds (VOCs)																				
Toluene	µg/kg	<3 - <5	900000	120000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	11
Tetrachloroethene (PCE)	µg/kg	<3	424000	900	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	<3
Ethylbenzene	µg/kg	<3 - <5	500000	65000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	18
Xylenes	µg/kg	<8 - <10	500000	42000	<9	<8	NA	NA	NA	<8	<8	NA	<9	<8	<8	<8	NA	NA	NA	178
Isopropylbenzene	µg/kg	<3	390000	11000	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	17
Propylbenzene	µg/kg	<4	402000	34000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	37
1,3,5-Trimethylbenzene	µg/kg	<3	557000	350	<3	<3	NA	NA	NA	<3	<3	NA	<3	<3	<3	<3	NA	NA	NA	73
tert-Butylbenzene	µg/kg	<5	435000	34000	<5	<5	NA	NA	NA	<5	<5	NA	<5	<5	<5	<5	NA	NA	NA	<5
1,2,4-Trimethylbenzene	µg/kg	<6	557000	350	<6	<6	NA	NA	NA	<6	<6	NA	<6	<6	<6	<6	NA	NA	NA	209
sec-Butylbenzene	µg/kg	<4	517000	34000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	<4
4-Isopropyltoluene	µg/kg	<4	613000	34000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	103
n-Butylbenzene	µg/kg	<4	349000	34000	<4	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	<4	NA	NA	NA	<4
Petroleum Hydrocarbons C5-C35																				
Aliphatics >C5-C6	mg/kg	<0.1	300	30	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aliphatics >C6-C8	mg/kg	<0.1	100	73	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aliphatics >C8-C10	mg/kg	<0.1	80	19	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	3.2
Aliphatics >C10-C12	mg/kg	<0.2	50	93	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	NA	NA	NA	***70.7***
Aliphatics >C12-C16	mg/kg	<4	20	740	<4	<4	NA	NA	NA	NA	NA	NA	NA	<4	***20***	<4	NA	NA	NA	***1062***
Aliphatics >C16-C35	mg/kg	<14	8	45000	<14	<14	NA	NA	NA	NA	NA	NA	NA	<14	***173***	<14	NA	NA	NA	***6324***
Aromatics >C5-EC7	mg/kg	<0.1	1000	65	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aromatics >EC7-EC8	mg/kg	<0.1	900	120	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	<0.1
Aromatics >EC8-EC10	mg/kg	<0.1	600	27	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	0.1
Aromatics >EC10-EC12	mg/kg	<0.2	400	69	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	NA	NA	NA	<1.2
Aromatics >EC12-EC16	mg/kg	<4	200	140	<4	<4	NA	NA	NA	NA	NA	NA	NA	<4	<4	<4	NA	NA	NA	***424***
Aromatics >EC16-EC21	mg/kg	<7	50	250	<7	<7	NA	NA	NA	NA	NA	NA	NA	<7	16	<7	NA	NA	NA	***2050***
Aromatics >EC21-EC35	mg/kg	<7	5	890	<7	<7	NA	NA	NA	NA	NA	NA	NA	<7	***54***	<7	NA	NA	NA	***7543***
TPH Hazard Quotient	--	--	--	1	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	0.00	0.16	0.00	NA	NA	NA	22.21
Concentration > GAC	200																			
Concentration > Saturation Limit	200																			
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																				
Elemental Mercury = Elemental Mercury results, analysed May 2014																				

Table 6c: Soil Analytical Results Screening for Human Health GAC - Residential (with plant uptake)

Analyte	Units	LOD	Soil Saturation Limit 1% SOM, Sandy Loam	Residential GAC 1% SOM	WS19	WS20	WS21	WS22	WS23	WS24	WS25	WS27	WS28	WS28	WS29	WS30	WS32	WS33	WS33	WS36	WS36
					0.7-0.8m	0.6-0.7m	0.7-0.8m	0.9-1.0m	0.3-0.4m	0.9-1.0m	0.6-0.7m	0.6-0.7m	0.6-0.7m	1.8-1.9m	0.7-0.8m	0.6-0.7m	0.5-0.6m	0.5-0.6m	1.3-1.4m	0.8-0.9m	1.4-1.5m
Metals & Metalloids																					
Arsenic	mg/kg	<0.5	NR	32	11	6.8	15.1	9.6	6.7	14.1	13.9	6.2	12.1	NA	35.9	9.4	9.8	7.9	8	8.6	NA
Cadmium	mg/kg	<0.1	NR	10	<0.1	<0.1	0.3	<0.1	0.4	0.4	0.1	0.1	0.3	NA	0.2	0.6	<0.1	<0.1	<0.1	0.1	NA
Chromium (Total)	mg/kg	<0.5	NR	--	21.5	12.5	24.5	33.9	10.4	24.1	37.7	13.9	21.7	NA	24	28.7	19.1	21.8	15.6	16.2	NA
Hexavalent Chromium	mg/kg	<0.3	NR	4.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.5	<0.3	0.5	<0.3	NA	0.4	<0.3	0.5	<0.3	<0.3	<0.3	NA
Trivalent Chromium (calculated)	mg/kg	<0.5	NR	627	21.5	12.5	24.5	33.9	10.4	23.6	37.7	13.4	21.7	NA	23.6	28.7	18.6	21.8	15.6	16.2	NA
Copper	mg/kg	<1	NR	2330	19	76	76	17	7	104	29	12	23	NA	281	52	42	14	10	29	NA
Lead	mg/kg	<5	NR	450	22	46	98	14	36	766	69	57	121	NA	372	75	33	24	6	35	NA
Inorganic Mercury	mg/kg	<0.1	NR	238	47.1	3.6	10.2	<0.1	<0.1	2.7	0.4	<0.1	0.3	NA	3.3	8.1	0.2	0.1	0.2	0.1	NA
Elemental Mercury	mg/kg	<0.00002	4.31	0.17	<0.00002	0.00286	0.03002	NA	NA	<0.00002	<0.00002	NA	0.01448	NA	0.00045	0.00113	NA	0.00087	NA	0.02104	NA
Nickel	mg/kg	<0.7	NR	130	15.2	9.3	24.5	21.5	6.9	17.2	25.6	10.9	15.7	NA	20.5	24.4	13.8	15.3	13.1	14.1	NA
Zinc	mg/kg	<5	NR	3750	62	68	199	65	85	242	100	37	64	NA	190	277	60	39	20	41	NA
pH	pH units	<0.01	NR	NA	9.3	NA	11.05	NA	11.96	NA	8.24	12	NA	NA	10.74	NA		7.88		9.74	NA
Polycyclic Aromatic Hydrocarbons (PAH)																					
Naphthalene	mg/kg	<0.03 - <0.04	80	1.5	<0.04	0.46	0.08	<0.04	0.16	0.19	<0.04	<0.04	5.34	NA	0.05	2.3	0.05	<0.04	<0.027	<0.04	NA
Acenaphthylene	mg/kg	<0.03	90	170	<0.03	0.23	<0.03	<0.03	0.05	0.23	<0.03	0.06	24.74	NA	0.08	3.71	0.28	<0.03	<0.03	<0.03	NA
Acenaphthene	mg/kg	<0.05	60	210	<0.05	0.45	<0.05	<0.05	0.08	0.26	<0.05	<0.05	34.36	NA	<0.05	2.66	0.23	<0.05	<0.05	<0.05	NA
Fluorene	mg/kg	<0.04	30	160	<0.04	0.49	<0.04	<0.04	0.07	0.26	<0.04	<0.04	***49.14***	NA	<0.04	2.39	0.16	<0.04	<0.04	<0.04	NA
Phenanthrene	mg/kg	<0.03	40	92	0.08	2.41	0.25	<0.03	0.62	2.69	0.15	0.69	***278.8***	NA	0.2	28.52	4.42	0.06	<0.03	0.11	NA
Anthracene	mg/kg	<0.04	1	2300	<0.04	0.91	0.08	<0.04	0.15	0.74	0.05	0.15	***119.72***	NA	0.06	***12.62***	***1.24***	<0.04	<0.04	<0.04	NA
Fluoranthene	mg/kg	<0.03	20	260	0.14	2.59	0.34	<0.03	0.84	4.67	0.37	0.96	***398.56***	NA	0.54	***74.67***	8.72	0.13	<0.03	0.2	NA
Pyrene	mg/kg	<0.03	2	560	0.15	***2.27***	0.31	<0.03	0.81	***3.79***	0.33	0.79	***301.49***	NA	0.5	***71.83***	***7.26***	0.13	<0.03	0.17	NA
Benzo(a)anthracene	mg/kg	<0.06	2	3.1	0.09	0.97	0.24	<0.06	0.25	1.88	0.2	0.38	***152.22***	NA	0.26	***38.33***	***3.5***	0.11	<0.06	0.11	NA
Chrysene	mg/kg	<0.02	0.4	6	0.08	***1.06***	0.18	<0.02	0.38	***2.1***	0.2	0.37	***128.96***	NA	0.3	***38.44***	***3.14***	0.08	<0.02	0.11	NA
Benzo(a)pyrene	mg/kg	<0.04	1	0.83	0.09	***1.17***	0.24	<0.04	0.33	***2.57***	0.23	0.37	***136.2***	NA	0.43	***58.55***	***3.14***	0.12	<0.04	0.14	NA
Indeno(123cd)pyrene	mg/kg	<0.04	0.06	3.2	0.05	***0.77***	***0.13***	<0.04	***0.2***	***1.68***	***0.14***	***0.22***	***74.32***	NA	***0.26***	***36.02***	***2***	***0.06***	<0.04	***0.09***	NA
Dibenzo(ah)anthracene	mg/kg	<0.04	0.004	0.76	<0.04	***0.13***	<0.04	<0.04	<0.04	***0.31***	<0.04	***0.05***	***11.02***	NA	***0.05***	***4.81***	***0.73***	<0.04	<0.04	<0.04	NA
Benzo(ghi)perylene	mg/kg	<0.04	0.02	44	***0.05***	***0.64***	***0.13***	<0.04	***0.21***	***1.75***	***0.15***	***0.21***	***72.29***	NA	***0.27***	***37.72***	***1.88***	***0.06***	<0.04	***0.09***	NA
Benzo(b)fluoranthene	mg/kg	<0.05	0.7	5.6	0.09	***1.27***	0.23	<0.05	0.4	***2.74***	0.24	0.42	***154.03***	NA	0.47	***60.44***	***3.71***	0.1	<0.05	0.14	NA
Benzo(k)fluoranthene	mg/kg	<0.02	0.9	8.5	0.04	0.49	0.09	<0.02	0.15	***1.07***	0.09	0.17	***59.9***	NA	0.18	***23.51***	***1.44***	0.04	<0.02	0.06	NA
Concentration > GAC	200																				
Concentration > Saturation Limit	*200*																				
Volatile Organic Compounds (VOCs)																					
Toluene	µg/kg	<3 - <5	900000	120000	<3	<3	21	<3	<3	NA	<4	NA	NA	15	<4	NA	<3	<3	<3	NA	57
Tetrachloroethene (PCE)	µg/kg	<3	424000	900	10	<3	<3	<3	<3	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Ethylbenzene	µg/kg	<3 - <5	500000	65000	<3	<3	<3	<3	8	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Xylenes	µg/kg	<8 - <10	500000	42000	<9	<9	<9	<9	130	<9	<9	NA	NA	<9	<9	NA	<8	<9	<8	NA	<9
Isopropylbenzene	µg/kg	<3	390000	11000	<3	10	<3	<3	6	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
Propylbenzene	µg/kg	<4	402000	34000	<4	<4	<4	<4	19	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
1,3,5-Trimethylbenzene	µg/kg	<3	557000	350	<3	<3	<3	<3	64	NA	<3	NA	NA	<3	<3	NA	<3	<3	<3	NA	<3
tert-Butylbenzene	µg/kg	<5	435000	34000	<5	<5	<5	<5	<5	NA	<5	NA	NA	<5	<5	NA	<5	<5	<5	NA	<5
1,2,4-Trimethylbenzene	µg/kg	<6	557000	350	<6	15	<6	<6	240	NA	<6	NA	NA	<6	<6	NA	<6	<6	<6	NA	<6
sec-Butylbenzene	µg/kg	<4	517000	34000	<4	<4	<4	<4	<4	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
4-Isopropyltoluene	µg/kg	<4	613000	34000	<4	22	<4	<4	10	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
n-Butylbenzene	µg/kg	<4	349000	34000	<4	<4	<4	<4	43	NA	<4	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
Petroleum Hydrocarbons C5-C35																					
Aliphatics >C5-C6	mg/kg	<0.1	300	30	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C6-C8	mg/kg	<0.1	100	73	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C8-C10	mg/kg	<0.1	80	19	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aliphatics >C10-C12	mg/kg	<0.2	50	93	<0.2	<0.2	<0.2	<0.2	1.7	<0.2	NA	NA	NA	<0.2	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2
Aliphatics >C12-C16	mg/kg	<4	20	740	<4	<4	<4	<4	***69***	<4	NA	NA	NA	<4	<4	NA	6	<4	<4	NA	<4
Aliphatics >C16-C35	mg/kg	<14	8	45000	<14	<14	<14	<14	***545***	<14	NA	NA	NA	<14	<14	NA	***154***	<14	<14	NA	<14
Aromatics >C5-EC7	mg/kg	<0.1	1000	65	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC7-EC8	mg/kg	<0.1	900	120	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC8-EC10	mg/kg	<0.1	600	27	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	NA	NA	NA	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1
Aromatics >EC10-EC12	mg/kg	<0.2	400	69	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2
Aromatics >EC12-EC16	mg/kg	<4	200	140	<4	<4	<4	<4	23	<4	NA	NA	NA	<4	<4	NA	<4	<4	<4	NA	<4
Aromatics >EC16-EC21	mg/kg	<7	50	250	<7	<7	<7	<7	***123***	28	NA	NA	NA	<7	<7	NA	32	<7	<7	NA	<7
Aromatics >EC21-EC35	mg/kg	<7	5	890	<7	<7	<7	<7	***200***	***141***	NA	NA	NA	<7	<7	NA	***150***	<7	<7	NA	<7
TPH Hazard Quotient	--	--	--	1	0.00	0.00	0.00	0.00	1.04	0.27	NA	NA	NA	0.00	0.00	NA	0.31	0.00	0.00	NA	0.00
Concentration > GAC	200																				
Concentration > Saturation Limit	200																				
Inorganic Mercury = Total Mercury results, analysed December 2013/Feb 2014																					
Elemental Mercury = Elemental Mercury results, analysed May 2014																					

Table 6d: Comparison of February and follow on (May) soil mercury results (select samples)

Nestlé Hayes soil sample analysis - February 2014			Sample ID	WS1	WS3	SO-WS3	WS4	WS12	WS17	WS19	WS20	WS21	WS24	WS25	WS28	WS29	WS30	WS33	WS36
			Depth (m)	0.7-0.8	0.7-0.8	1.0-1.1	0.7-0.8	0.8-0.9	1.3-1.4	0.7-0.8	0.6-0.7	0.7-0.8	0.9-1.0	0.6-0.7	0.6-0.7	0.7-0.8	0.6-0.7	0.5-0.6	0.8-0.9
Test	Method	Units	LOD																
Total Mercury	TM30/PM15	mg/kg	<0.1	15.7	2.3	NA	1.2	1.8	NA	47.1	3.6	10.2	2.7	0.4	0.3	3.3	8.1	0.1	0.1

Nestlé Hayes soil sample analysis - June 2014			Sample ID	WS1	WS3	SO-WS3	WS4	WS12	WS17	WS19	WS20	WS21	WS24	WS25	WS28	WS29	WS30	WS33	WS36
			Depth (m)	0.7-0.8	0.7-0.8	1.0-1.1	0.7-0.8	0.8-0.9	1.3-1.4	0.7-0.8	0.6-0.7	0.7-0.8	0.9-1.0	0.6-0.7	0.6-0.7	0.7-0.8	0.6-0.7	0.5-0.6	0.8-0.9
Test	Method	Units	LOD																
Total Mercury CVAF	TM61/PM15	mg/kg	<0.5	2.7	2.6	0.5	1	3.1	0.8	21.6	NA	NA	2.1	0.5	0.5	NA	NA	0.5	0.5
Total Mercury CVAF	TM61/PM62	mg/kg	<0.5	NA	NA	NA	NA	NA	NA	NA	4.8	9.5	NA	NA	NA	2.9	9	NA	NA
Elemental Mercury	TM96/PM53	mg/kg	<0.00002	0.00032	0.00837	0.03554	0.03501	0.04691	0.00042	0.00002	0.00286	0.03002	0.00002	0.00002	0.01448	0.00045	0.00113	0.00087	0.02104
			% elemental mercury	0.0	0.3	7.1	3.5	1.5	0.1	0.0	0.1	0.3	0.0	0.0	2.9	0.0	0.0	0.2	4.2

Notes:

TM30	Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES).
TM61	Analysis by Cold Vapour Atomic Fluorescence.
TM96	Injection of mercury vapour onto gold/platinum gauze. Burning of gause to revaporise mercury. Detection via fluorescence spectrometry. Quantification by comparison of detection and calibration peaks.
PM62	Aqua regia extraction - as received sample. Used for samples containing asbestos.
PM15	Acid digestion of dried and crushed sample using aqua regia reflux.
PM53	Mercury vapour extracted from between 1 - 3 g of wet sample by argon gas purge.
NA	not analysed
0.5	<0.5 mg/kg
0.00002	<0.00002 mg/kg

NB: Higher total mercury detection limit June 2014 vs February 2014 - June 2014 total mercury soil analysis by CVAF for comparison with groundwater samples analysed by same method in both February and June 2014

Table 7: Groundwater Analytical Results
Screening against Environmental and Drinking Water Quality Standards

≥ DWS			≥ EQS					Sample location	BH1	Duplicate of BH1	BH2	BH3	BH5	BH6	BH7	BH8	BH9	ABS
≥ EQS & DWS								Sample date	04/12/2013	04/12/2013	04/12/2013	03/12/2013	03/12/2013	03/12/2013	04/12/2013	03/12/2013	03/12/2013	04/12/2013
Analyte	**Units**	**LOD**	**DWS**	**unit**	**DWS reference**	**EQS**	**unit**	**EQS reference**										
Dissolved Arsenic #	ug/l	<2.5 / <0.9	10	ug/l	UK DWS	50	ug/l	UK - inland surface waters	15.1	15.6	<2.5	<2.5	4.1	<2.5	<2.5	<2.5	3.4	<2.5
Dissolved Barium	ug/l	<1.8	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Boron	ug/l	<2	1000	ug/l	UK DWS	1000	ug/l	UK - various incl.aquatic life + DWS	189	178	135	167	264	130	123	121	267	559
Dissolved Cadmium #	ug/l	<0.5 / <0.03	5	ug/l	UK DWS	0.45	ug/l	MAC - UK inland surface water - (<40 mg/l CaCO3)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Dissolved Chromium #	ug/l	<0.2	50	ug/l	UK DWS	3.4	ug/l	UK - inland surface water	3	3.3	<1.5	<1.5	<1.5	<1.5	<1.5	2	1.6	<1.5
Dissolved Copper #	ug/l	<3	2000	ug/l	UK DWS	22	ug/l	UK - inland freshwater - CaCO3 10<50 mg/l	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7
Dissolved Lead #	ug/l	<5 / <0.4	10	ug/l	UK DWS	7.2	ug/l	EU - inland surface water	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dissolved Mercury	ug/l	<1 / <0.01	1	ug/l	UK DWS	0.05	ug/l	UK - inland surface waters - (MAC 0.07 ug/l)	3	3	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Nickel #	ug/l	<2 / <0.2	20	ug/l	UK DWS	20	ug/l	UK - inland surface water	44	43	<2	17	4	2	3	17	4	<2
Dissolved Potassium	mg/l	<0.1	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Selenium #	ug/l	<3 / <1.2	10	ug/l	UK DWS	10	ug/l	UK - surface waters intended for abstraction of drinking water	<3	<3	<3	<3	<3	3	<3	<3	<3	<3
Dissolved Sodium	mg/l	<0.1	200	mg/l	UK DWS	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Vanadium	ug/l	<0.6	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Zinc #	ug/l	<3 / <1.5	3000	ug/l	UK EQS - surface waters intended for abstraction of drinking water	200	ug/l	UK - inland freshwater - (10>50 mg/l CaCO3)	<3	<3	<3	<3	<3	<3	<3	<3	<3	6
Hexavalent Chromium	ug/l	<30 / <2	50	ug/l	UK EQS - surface waters intended for abstraction of drinking water	50	ug/l	UK - surface waters intended for abstraction of drinking water	<30	<30	50	<30	<30	<30	<30	<30	<30	<30
PAH MS																		
Sum benzo(b+k)fluoranthene, benzo(ghi)perylene and indeno(123cd)pyrene)	ug/l	<0.040	0.1	ug/l	UK DWS	-	-	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Naphthalene #	ug/l	<0.014	1	ug/l	UK EQS - surface waters intended for abstraction of drinking water (A3)**	2.4	ug/l	UK - inland surface water	0.96	0.47	21.38	<0.014	<0.014	0.12	0.07	0.04	<0.014	<0.014
Acenaphthylene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	0.04	0.03	0.3	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Acenaphthene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	0.93	0.72	2.79	<0.013	0.02	0.04	0.02	0.11	<0.013	<0.013
Fluorene #	ug/l	<0.014	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	0.37	0.3	1.89	<0.014	<0.014	0.03	0.02	0.02	<0.014	<0.014
Phenanthrene #	ug/l	<0.011	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	0.1	0.09	2.78	0.02	0.03	0.05	0.05	0.02	<0.011	<0.011
Anthracene #	ug/l	<0.013	-	-	-	0.4	ug/l	MAC - UK inland surface water - (AA 0.1 ug/l)	0.05	0.04	0.37	<0.013	<0.013	0.02	<0.013	<0.013	<0.013	<0.013
Fluoranthene #	ug/l	<0.012	-	-	-	1.0	ug/l	MAC - UK inland surface water - (AA0.1 ug/l)	0.04	0.03	0.31	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Pyrene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	0.02	0.02	0.17	<0.013	<0.013	<0.013	<0.013	<0.013	0.04	<0.013
Benzo(a)anthracene #	ug/l	<0.015	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.015	<0.015	0.02	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Chrysene #	ug/l	<0.011	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Benzo(bk)fluoranthene #	ug/l	<0.018	-	-	-	0.03	ug/l	UK - inland surface water	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Benzo(a)pyrene #	ug/l	<0.016	0.01	ug/l	UK DWS	0.05	ug/l	UK - inland surface water	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Indeno(123cd)pyrene #	ug/l	<0.011	-	-	-	0.002	ug/l	UK - inland surface water	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Dibenzo(ah)anthracene #	ug/l	<0.01	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(ghi)perylene #	ug/l	<0.011	-	-	-	0.002	ug/l	UK - inland surface water	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
PAH 16 Total	ug/l	<0.195	-	-	-	-			2.51	1.7	30.01	0.02	0.05	0.26	0.16	0.19	0.04	<0.195

8 Commonly measured Genotoxic PAHs
value applies to sum of benzo(ghi)perylene and indeno(123cd)pyrene
no standard available - conservative standard for Benzo(a)pyrene used
A3** - surface waters requiring intensive physical treatment for transformation into drinking water

Table 7: Groundwater Analytical Results
Screening against Environmental and Drinking Water Quality Standards

≥ DWS			≥ EQS						Sample location	WS17	WS22	WS28	WS36	BH1	BH2	Duplicate of BH2	BH4	BH5	BH8	BH9	ABS
≥ EQS & DWS									Sample date	27/02/2014	27/02/2014	28/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	28/02/2014
Analyte	**Units**	**LOD**	**DWS**	**unit**	**DWS reference**	**EQS**	**unit**	**EQS reference**													
Dissolved Arsenic #	ug/l	<2.5 / <0.9	10	ug/l	UK DWS	50	ug/l	UK - inland surface waters	1.4	8.7	<0.9	<0.9	21	<0.9	<0.9	<0.9	<0.9	8.7	<0.9	<0.9
Dissolved Barium	ug/l	<1.8	-	-	-	-	-	-	10.8	34.9	173.1	104.7	39.6	26.5	23.6	89.9	86.1	3.2	124.6	22
Dissolved Boron	ug/l	<2	1000	ug/l	UK DWS	1000	ug/l	UK - various incl.aquatic life + DWS	133	174	217	115	126	94	87	373	252	123	200	597
Dissolved Cadmium #	ug/l	<0.5 / <0.03	5	ug/l	UK DWS	0.45	ug/l	MAC - UK inland surface water - (<40 mg/l CaCO3)	<0.03	<0.03	4.76	<0.03	<0.03	0.06	<0.03	0.82	1.29	<0.03	0.12	<0.03
Total Dissolved Chromium #	ug/l	<0.2	50	ug/l	UK DWS	3.4	ug/l	UK - inland surface water	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dissolved Copper #	ug/l	<3	2000	ug/l	UK DWS	22	ug/l	UK - inland freshwater - CaCO3 10<50 mg/l	<3	5	<3	3	<3	<3	<3	<3	<3	7	<3	<3
Dissolved Lead #	ug/l	<5 / <0.4	10	ug/l	UK DWS	7.2	ug/l	EU - inland surface water	3	3.7	7.2	31.9	2.8	1.2	1.4	2.7	3.8	4	3.2	3.5
Dissolved Mercury	ug/l	<1 / <0.01	1	ug/l	UK DWS	0.05	ug/l	UK - inland surface waters - (MAC 0.07 ug/l)	<0.01	0.21	<0.01	0.03	40.64	0.2	0.19	<0.01	<0.01	0.87	0.01	<0.01
Dissolved Nickel #	ug/l	<2 / <0.2	20	ug/l	UK DWS	20	ug/l	UK - inland surface water	<0.2	0.7	0.9	14.6	17.6	1.4	0.5	2.4	4.6	3.1	3	<0.2
Dissolved Potassium	mg/l	<0.1	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.3	NA	NA
Dissolved Selenium #	ug/l	<3 / <1.2	10	ug/l	UK DWS	10	ug/l	UK - surface waters intended for abstraction of drinking water	<1.2	14.1	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Dissolved Sodium	mg/l	<0.1	200	mg/l	UK DWS	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	279.7	NA	NA
Dissolved Vanadium	ug/l	<0.6	-	-	-	-	-	-	16.2	42.2	3	34.8	30.6	10.5	11	12.4	11.7	18.2	10.8	10.4
Dissolved Zinc #	ug/l	<3 / <1.5	3000	ug/l	UK EQS - surface waters intended for abstraction of drinking water	200	ug/l	UK - inland freshwater - (10>50 mg/l CaCO3)	<1.5	2.2	9	26.8	2.2	2.2	<1.5	3.6	4.3	1.7	2.1	13.3
Hexavalent Chromium	ug/l	<30 / <2	50	ug/l	UK EQS - surface waters intended for abstraction of drinking water	50	ug/l	UK - surface waters intended for abstraction of drinking water	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
PAH MS																				
Sum benzo(b+k)fluoranthene, benzo(ghi)perylene and indeno(123cd)pyrene)	ug/l	<0.040	0.1	ug/l	UK DWS	-	-	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Naphthalene #	ug/l	<0.014	1	ug/l	UK EQS - surface waters intended for abstraction of drinking water (A3)**	2.4	ug/l	UK - inland surface water	<0.014	<0.014	0.04	0.07	3.95	0.07	<0.014	0.03	0.02	0.36	<0.014	<0.014
Acenaphthylene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.013	<0.013	<0.013	<0.013	0.06	0.02	<0.013	<0.013	<0.013	<0.013	0.09	<0.013
Acenaphthene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.013	0.02	0.31	0.03	1.81	0.46	0.05	0.15	<0.013	0.19	0.33	<0.013
Fluorene #	ug/l	<0.014	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.014	<0.014	0.22	0.03	0.95	0.29	<0.014	0.07	<0.014	0.05	0.77	<0.014
Phenanthrene #	ug/l	<0.011	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	0.02	0.02	0.65	0.04	0.35	0.02	<0.011	0.17	0.02	0.04	0.14	<0.011
Anthracene #	ug/l	<0.013	-	-	-	0.4	ug/l	MAC - UK inland surface water - (AA 0.1 ug/l)	<0.013	<0.013	0.15	<0.013	0.06	0.03	<0.013	0.05	<0.013	<0.013	0.02	<0.013
Fluoranthene #	ug/l	<0.012	-	-	-	1.0	ug/l	MAC - UK inland surface water - (AA0.1 ug/l)	<0.012	<0.012	0.18	0.02	0.04	0.38	0.12	0.14	<0.012	0.02	0.02	<0.012
Pyrene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.013	0.02	0.12	0.02	0.02	0.27	0.24	0.08	<0.013	0.02	0.05	<0.013
Benzo(a)anthracene #	ug/l	<0.015	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.015	<0.015	0.02	<0.015	<0.015	0.02	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Chrysene #	ug/l	<0.011	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.011	<0.011	<0.011	<0.011	<0.011	0.02	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Benzo(bk)fluoranthene #	ug/l	<0.018	-	-	-	0.03	ug/l	UK - inland surface water	<0.018	0.02	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Benzo(a)pyrene #	ug/l	<0.016	0.01	ug/l	UK DWS	0.05	ug/l	UK - inland surface water	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Indeno(123cd)pyrene #	ug/l	<0.011	-	-	-	0.002	ug/l	UK - inland surface water	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Dibenzo(ah)anthracene #	ug/l	<0.01	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(ghi)perylene #	ug/l	<0.011	-	-	-	0.002	ug/l	UK - inland surface water	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
PAH 16 Total	ug/l	<0.195	-	-	-	-			0.02	0.08	1.69	0.21	7.24	1.58	0.41	0.69	0.04	0.68	1.42	<0.195

8 Commonly measured Genotoxic PAHs
value applies to sum of benzo(ghi)perylene and indeno(123cd)pyrene
no standard available - conservative standard for Benzo(a)pyrene used
A3** - surface waters requiring intensive physical treatment for transformation into drinking water

Table 7: Groundwater Analytical Results
Screening against Environmental and Drinking Water Quality Standards

≥ DWS			≥ EQS					Sample location	WS1	WS17	WS22	WS28	WS36	BH1	Duplicate of BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BH9
≥ EQS & DWS								Sample date	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	27/05/2014
Analyte	**Units**	**LOD**	**DWS**	**unit**	**DWS reference**	**EQS**	**unit**	**EQS reference**																
Dissolved Arsenic #	ug/l	<2.5 / <0.9	10	ug/l	UK DWS	50	ug/l	UK - inland surface waters	<0.9	4.1	15.2	5.4	4.3	28.3	31.1	1.7	<0.9	<0.9	<0.9	<0.9	<0.9	5.9	<0.9
Dissolved Barium	ug/l	<1.8	-	-	-	-	-	-	51.4	24.5	22	168.8	58.4	16.8	17.1	34	85.3	130.9	86.1	78.7	42.8	9.5	135.2
Dissolved Boron	ug/l	<2	1000	ug/l	UK DWS	1000	ug/l	UK - various incl.aquatic life + DWS	57	126	238	294	126	7	110	111	183	436	250	138	481	150	246
Dissolved Cadmium #	ug/l	<0.5 / <0.03	5	ug/l	UK DWS	0.45	ug/l	MAC - UK inland surface water - (<40 mg/l CaCO3)	0.09	<0.03	0.05	4	0.25	0.14	0.07	0.23	0.17	1.66	1.58	<0.03	0.04	<0.03	0.26
Total Dissolved Chromium #	ug/l	<0.2	50	ug/l	UK DWS	3.4	ug/l	UK - inland surface water	<0.2	0.3	0.4	<0.2	0.4	<0.2	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	2.7	<0.2	<0.2
Dissolved Copper #	ug/l	<3	2000	ug/l	UK DWS	22	ug/l	UK - inland freshwater - CaCO3 10<50 mg/l	<3	<3	9	5	<3	<3	<3	<3	3	<3	<3	4	9	<3	<3
Dissolved Lead #	ug/l	<5 / <0.4	10	ug/l	UK DWS	7.2	ug/l	EU - inland surface water	1.1	1.6	3.4	4.2	15.5	2	2.1	0.7	0.9	2.7	1.9	0.7	1.1	1	1.6
Dissolved Mercury	ug/l	<1 / <0.01	1	ug/l	UK DWS	0.05	ug/l	UK - inland surface waters - (MAC 0.07 ug/l)	<0.01	0.01	1.24	0.03	0.04	22.86	30.28	0.04	<0.01	<0.01	<0.01	<0.01	0.02	0.46	<0.01
Dissolved Nickel #	ug/l	<2 / <0.2	20	ug/l	UK DWS	20	ug/l	UK - inland surface water	1	0.9	2.1	<0.2	14.9	6.1	5.2	0.9	14.1	2.3	4.3	2.3	0.3	3.8	3.7
Dissolved Potassium	mg/l	<0.1	-	-	-	-	-	-	10.8	12.4	13.8	12.8	47.4	9.8	9.9	10.2	5.2	13.7	5.7	9.5	7.3	7.8	12.9
Dissolved Selenium #	ug/l	<3 / <1.2	10	ug/l	UK DWS	10	ug/l	UK - surface waters intended for abstraction of drinking water	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Dissolved Sodium	mg/l	<0.1	200	mg/l	UK DWS	-	-	-	63.7	23.6	181.8	274.3	89.7	154.9	153.5	74.4	143.3	76.5	58.2	63.4	369.5	332.7	154.2
Dissolved Vanadium	ug/l	<0.6	-	-	-	-	-	-	1.1	6.2	40.9	3	15.6	25	25	0.9	2.1	1.5	1.5	1	4.1	4.9	1.4
Dissolved Zinc #	ug/l	<3 / <1.5	3000	ug/l	UK EQS - surface waters intended for abstraction of drinking water	200	ug/l	UK - inland freshwater - (10>50 mg/l CaCO3)	2.5	1.8	3.2	7.5	20.4	<1.5	2.5	5.2	7.4	7.6	7.4	6.4	3.3	2.3	5.1
Hexavalent Chromium	ug/l	<30 / <2	50	ug/l	UK EQS - surface waters intended for abstraction of drinking water	50	ug/l	UK - surface waters intended for abstraction of drinking water	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	<2	<2
PAH MS																								
Sum benzo(b+k)fluoranthene, benzo(ghi)perylene and indeno(123cd)pyrene)	ug/l	<0.040	0.1	ug/l	UK DWS	-	-	-																
Naphthalene #	ug/l	<0.014	1	ug/l	UK EQS - surface waters intended for abstraction of drinking water (A3)**	2.4	ug/l	UK - inland surface water	<0.014	0.03	<0.014	0.23	<0.014	6.03	3.72	0.24	0.02	0.05	<0.014	<0.014	<0.014	0.19	0.03
Acenaphthylene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.013	<0.013	0.03	<0.013	<0.013	0.08	0.06	0.03	<0.013	<0.013	<0.013	<0.013	<0.013	0.02	0.03
Acenaphthene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.013	<0.013	<0.013	0.11	<0.013	3.08	1.69	0.33	<0.013	<0.013	<0.013	<0.013	<0.013	0.16	0.13
Fluorene #	ug/l	<0.014	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.014	<0.014	<0.014	0.1	<0.014	1.93	1.11	0.44	<0.014	0.02	<0.014	<0.014	<0.014	0.06	0.26
Phenanthrene #	ug/l	<0.011	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.011	<0.011	0.02	0.29	0.02	0.93	0.58	1.23	<0.011	<0.011	<0.011	<0.011	<0.011	0.05	0.03
Anthracene #	ug/l	<0.013	-	-	-	0.4	ug/l	MAC - UK inland surface water - (AA 0.1 ug/l)	<0.013	<0.013	0.06	0.07	<0.013	0.16	0.08	0.31	<0.013	<0.013	<0.013	<0.013	<0.013	0.02	<0.013
Fluoranthene #	ug/l	<0.012	-	-	-	1.0	ug/l	MAC - UK inland surface water - (AA0.1 ug/l)	<0.012	<0.012	0.07	0.17	<0.012	0.12	0.08	0.4	<0.012	0.02	<0.012	<0.012	<0.012	0.02	0.02
Pyrene #	ug/l	<0.013	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.013	<0.013	0.13	0.11	<0.013	0.06	0.04	0.24	0.02	0.02	<0.013	<0.013	<0.013	0.02	0.04
Benzo(a)anthracene #	ug/l	<0.015	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.015	<0.015	0.04	0.02	<0.015	<0.015	<0.015	0.03	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Chrysene #	ug/l	<0.011	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.011	<0.011	0.08	<0.011	<0.011	<0.011	<0.011	0.02	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Benzo(bk)fluoranthene #	ug/l	<0.018	-	-	-	0.03	ug/l	UK - inland surface water	<0.018	<0.018	0.12	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Benzo(a)pyrene #	ug/l	<0.016	0.01	ug/l	UK DWS	0.05	ug/l	UK - inland surface water	<0.016	<0.016	0.07	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Indeno(123cd)pyrene #	ug/l	<0.011	-	-	-	0.002	ug/l	UK - inland surface water	<0.011	<0.011	0.03	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Dibenzo(ah)anthracene #	ug/l	<0.01	-	-	-	0.05	ug/l	see benzo(a)pyrene EQS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(ghi)perylene #	ug/l	<0.011	-	-	-	0.002	ug/l	UK - inland surface water	<0.011	<0.011	0.02	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
PAH16 Total	ug/l	<0.195	-	-	-	-			<0.195	0.03	0.67	1.1	0.02	12.39	7.36	3.27	0.04	0.11	<0.195	<0.195	<0.195	0.54	0.54

8 Commonly measured Genotoxic PAHs
value applies to sum of benzo(ghi)perylene and indeno(123cd)pyrene
no standard available - conservative standard for Benzo(a)pyrene used
A3** - surface waters requiring intensive physical treatment for transformation into drinking water

Geosyntec consultants

APPENDIX A

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 29/11/2013
Logged By: NR
Driller: Geotron UK Ltd.

Borehole Elevation: 30.47 maOD
Borehole Diameter: 200mm
Installation Diameter: 50mm ID
Slot Size: 1-2mm
Method: HSA / WS

Coordinates: ,

Borehole Reference:

BH1

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.60	MADE GROUND: Old concrete. Friable, cannot use core barrel. Breaker used to remove layer.			
0.80	Soft grey/black sandy gravelly CLAY. Possibly reworked in upper section.	Black staining with oil type hydrocarbon odour, 0.8 - 1.0m.		1.7 ppm
1.90	Soft grey/brown SILT. Grading to black peat in places with some fibrous rootlets/plant material.	Moist.		6.8 ppm
2.10	Soft grey/brown gravelly SILT. Gravel is medium to coarse of flint.	Moist.		9.1 ppm
2.40	Grey gravelly coarse SAND. Gravel is fine of flint. From 2.5m - grading to sandy GRAVEL of fine to coarse, angular to sub rounded flint. Poor recovery from 2.8 - 4.0m. Inferred gravelly SAND.	Wet.		7.7 ppm 4.1 ppm 2.0 ppm 9.0 ppm
4.00	Firm to stiff brown CLAY Becoming grey from 4.5m. End of boring: 5.1 mbgl.	Dry.		
5.10				

Notes: Hand dug to 1.2 mbgl. Sand and gravel collapse on extraction of augers, 4.0 - 2.2 mbgl. Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 02/12/2013
Logged By: NR
Driller: Geotron UK Ltd.

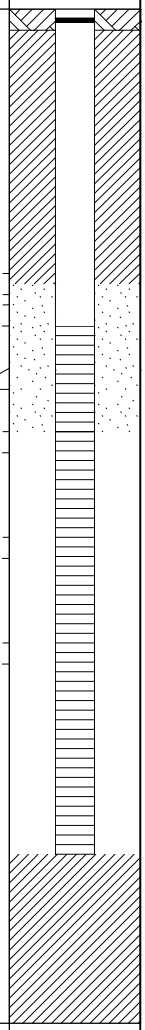
Borehole Elevation: 30.50 maOD
Borehole Diameter: 200mm
Installation Diameter: 50mm ID
Slot Size: 1-2mm
Method: HSA / WS

Coordinates: ,

Borehole Reference:

BH2

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.60	MADE GROUND: Old concrete. Friable, cannot use core barrel. Breaker used to remove layer.	Wet.		
0.80	Brown clayey GRAVEL of medium to coarse flint. Possibly reworked in upper section.			
1.30	Soft gravelly SILT. Grading to black peat in places with some fibrous rootlets/plant material. 1 large cobble of flint.	Moist to wet.		1.8 ppm
1.50	No recovery. Inferred SAND & GRAVEL.	Wet.		3.4 ppm
2				5.4 ppm
				3.6 ppm
2.40	Brown SAND & GRAVEL. Sand is coarse. Gravel is fine to medium, occasionally coarse of angular to sub rounded flint.	Wet.		5.4 ppm
3.00	Some clean gravel horizons. ~10 - 20 cm thick. Some slightly gravelly SAND horizons. ~10cm thick. No recovery. Inferred SAND & GRAVEL.	Wet.		5.5 ppm
3.70	Brown gravelly coarse SAND. Gravel is fine to medium, occasionally coarse of angular to sub rounded flint.	Wet.		
4				
4.00	Stiff brown CLAY. End of boring: 4.8 mbgl.	Dry.		
4.80				
6				



Notes: Hand dug to 1.2 mbgl. Sand and gravel collapse on extraction of augers, 4.0 - 2.0 mbgl. Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 28/11/2013
Logged By: NR
Driller: Geotron UK Ltd.

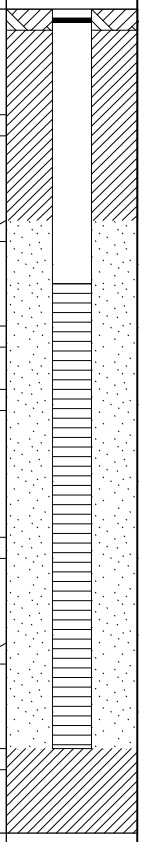
Borehole Elevation: 30.06 maOD
Borehole Diameter: 200mm
Installation Diameter: 50mm ID
Slot Size: 1-2mm
Method: HSA / WS

Coordinates: ,

Borehole Reference:

BH3

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.35	Soft brown slightly gravelly CLAY with occasional rootlets. Gravel is fine rarely medium to coarse of flint. Possibly reworked in upper sections.			4.1 ppm 3.8 ppm
1.30	Dark grey clayey GRAVEL. Gravel is medium to coarse, angular to sub rounded of flint.	Wet.		
1.50	Gravelly coarse SAND becoming sandy GRAVEL from 1.6m. Gravel is medium to coarse, angular to sub rounded of flint. Band of coarse brown SAND from 2.6 - 2.8m.	Wet.		2.8 ppm 5.0 ppm 5.2 ppm 5.9 ppm
3.40	Stiff brown CLAY. End of boring: 3.9 mbgl.	Dry.		4.2 ppm
3.90				
2				
4				
6				



Notes: Hand dug to 1.2 mbgl. Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: 29.47 maOD Borehole Diameter: 200mm Installation Diameter: 50mm ID Slot Size: 1-2mm Method: HSA / WS	Borehole Reference: **BH4**
Coordinates: ,		

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.33	MADE GROUND: slightly clayey sandy gravel of fine to coarse brick and stone of mixed lithologies. With occasional pieces of asphalt and slag type material. At 0.8m: Partial obstruction of hole - sloping concrete surface. Hole off-set and re-cored. Cobbles of / broken concrete below obstruction.			
1.50	Black/dark grey SILT with occasional rootlets.	Wet		
2 2.00	Grading to clayey slightly sandy GRAVEL of medium to coarse flint.	Wet		0.5ppm 0.7ppm
2.90	Stiff brown/grey CLAY. From 3.0 - 3.1m: Coarse SAND. END: 4.4m: Into London Clay.	Dry		0.5ppm 0.3ppm 0.3ppm
4 4.40				

Notes: Hand dug to 1.2 mbgl. Window sample to depth. GW monitoring well installed.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 28/11/2013 Logged By: NR Driller: Geotron UK Ltd.	Borehole Elevation: 29.58 maOD Borehole Diameter: Installation Diameter: Slot Size: Method:	Borehole Reference: **BH4a**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with 20mm steel reinforcement bar.			
0.40		MADE GROUND: Coarse beige gravel. (sub-base).	Dry.		1.3 ppm
0.50		MADE GROUND: Brown medium sand. (sub-base).	Dry.		1.7 ppm
0.60		MADE GROUND: Dark brown/grey slightly clayey sandy gravel. Gravel is fine to medium occasionally coarse of brick and flint, with rare fragments of wood. Possibly with some ash.	Dry.		
0.90		MADE GROUND: 1 very large cobble/boulder encountered at 0.9 m. Flat surface, possibly large brick or paving slab.	Dry.		
1.00		Obstruction and refusal at 0.9 - 1.0 mbgl.			
2					
4					
6					

Notes: Hand dug to 0.9mbgl. Refusal on large brick/paving slab obstruction. Backfilled with bentonite, cement at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 29/11/2013
Logged By: NR
Driller: Geotron UK Ltd.

Borehole Elevation: 29.20 maOD
Borehole Diameter: 200mm
Installation Diameter: 50mm ID
Slot Size: 1-2mm
Method: HSA / WS

Coordinates: ,

Borehole Reference:

BH5

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.30	MADE GROUND: Brown/black slightly silty, gravelly coarse sand. Gravel is of flint with some slag. occasional small cobble sized pieces of red brick and slag.	Dry.		3.2 ppm
1.00	Soft black/grey slightly gravelly SILT with some rootlets and fragments of wood. Slightly peaty in places. Gravel is fine to coarse of flint.	Moist.		1.2 ppm
1.60	Soft grey slightly gravelly CLAY. Gravel is fine to coarse of flint.	Dry.		3.8 ppm
1.80	Quickly grading to clayey GRAVEL of fine to coarse, angular to sub rounded flint.	Dry.		5.0 ppm
2.40	Becoming sandy clayey GRAVEL towards 2.4m. Grading to brown slightly clayey gravelly medium to coarse SAND.	Moist.		6.2 ppm
2.80	Brown sandy GRAVEL of fine to coarse angular to sub rounded flint. Band of coarse SAND from 3.4 - 3.6m.	Wet.		5.9 ppm
4.00	Firm brown CLAY.	Dry.		8.2 ppm
4.20	End of boring: 4.2 mbgl.			8.4 ppm

Notes: Hand dug to 1.2 mbgl. Sand and gravel collapse on extraction of augers, 4.2 - 3.3 mbgl. Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 26/11/2013 Logged By: NR Driller: Geotron UK Ltd.	Borehole Elevation: 30.06 maOD Borehole Diameter: 200mm Installation Diameter: 50mm ID Slot Size: 1-2mm Method: HSA / WS	Borehole Reference: **BH6**
Coordinates: ,		

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0				
0.10	MADE GROUND: Asphalt.			
0.15	MADE GROUND: Coarse gravel. (sub base).	Moist from 0.9m.		
	MADE GROUND: Brown sandy Gravel. Gravel is fine to coarse, angular sub angular of brick, concrete and stone (suspected demolition rubble).			1.9 ppm
	Becoming clayey from 0.7 m. Possible reworked natural deposits from this depth.			
1.05	Brown sandy GRAVEL. Sand is coarse. Gravel is fine to coarse, angular to sub rounded of flint.	Moist from 1.05m. Wet from ~1.8m.		0.0 ppm
	Band of gravelly coarse SAND from 1.2 - ~1.8 m.			0.2 ppm
2				0.2 ppm
				0.1 ppm
4				
4.00	Firm dark brown CLAY.	Dry.		0.9 ppm
	Becoming grey dark grey from 4.4m.			3.9 ppm
	End of boring: 5.2 mbgl.			2.7 ppm
				3.5 ppm
5.20				
6				

Notes: Hand dug to 1.2 mbgl. No Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 26/11/2013
Logged By: NR
Driller: Geotron UK Ltd.

Borehole Elevation: 31.06 maOD
Borehole Diameter: 200mm
Installation Diameter: 50mm ID
Slot Size: 1-2mm
Method: HSA / WS

Coordinates: ,

Borehole Reference:

BH7

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.15	MADE GROUND: Brown sandy gravel of flint. Possibly reworked. Becoming clayey sandy gravel from 0.9m.			
1.00	Soft brown gravelly clay. Possibly reworked Becoming slightly gravelly from 1.3m.	Moist from 1.3m.		2.9 ppm
1.40	Brown slightly clayey slightly sandy GRAVEL. Gravel is coarse, angular to sub rounded of flint.	Faint black staining from 1.5 - 1.9m. Wet from 1.8m.		5.5 ppm 6.7 ppm
1.90	Becoming grey, slightly clayey medium to coarse GRAVEL of flint from 1.8m.	Wet.		6.6 ppm
2	Brown sandy gravel of medium to coarse, angular to sub rounded flint. Band of coarse SAND from 3.65 - 3.85m.			6.2 ppm 7.8 ppm 8.1 ppm
4				7.9 ppm 8.4 ppm 5.8 ppm
5.95	Stiff brown CLAY.	Dry.		7.9 ppm
6	End of boring: 6.35 mbgl.			5.0 ppm
6.35				

Notes: Hand dug to 1.2 mbgl. Sand and gravel collapse on extraction of augers, 6.0 - 5.4 mbgl. Well pipe placed and further collapse from 5.4 - 4.5 mbgl. No Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 27/11/2013
Logged By: NR
Driller: Geotron UK Ltd.

Borehole Elevation: 31.06 maOD
Borehole Diameter: 200mm
Installation Diameter: 50mm ID
Slot Size: 1-2mm
Method: HSA / WS

Coordinates: ,

Borehole Reference:

BH8

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.50				
0.60	MADE GROUND: Full and half bricks.			
	Brown clayey GRAVEL of medium to coarse sub angular flint. Possibly reworked in upper section.	Moist. Faint black staining from 1.5 - 2.0m (possibly natural dark grey colouration).		4.7 ppm
				6.0 ppm
2				2.5 ppm
2.50	Brown sandy GRAVEL of fine to coarse angular to sub rounded flint.	Wet.		7.9 ppm
				7.4 ppm
				7.7 ppm
				7.0 ppm
4				5.7 ppm
				8.2 ppm
4.60	Firm brown CLAY.	Dry.		
	Becoming grey from 5.0m.			6.3 ppm
	End of boring: 5.4 mbgl.			
5.40				
6				

Notes: Hand dug to 1.2 mbgl. No Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 27/11/2013
Logged By: NR
Driller: Geotron UK Ltd.

Borehole Elevation: 31.15 maOD
Borehole Diameter: 200mm
Installation Diameter: 50mm ID
Slot Size: 1-2mm
Method: HSA / WS

Coordinates: ,

Borehole Reference:

BH9

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.20	MADE GROUND: Dark grey/black silty gravel of brick, slag and clinker. Becoming clayey gravel from ~0.8m. With some large cobble sized pieces of slag and 1 boulder of slag at 1.2m.	Dry to 0.8mbgl. Standing water in base of pit after 14 hours with iridescent hydrocarbon sheen and odour. Not observed below 1.45 mbgl.		5.5 ppm +50 ppm
1.50	Brown sandy GRAVEL of fine to coarse angular to sub rounded flint. Sand is coarse.	Moist.		7.8 ppm
1.80	No recovery. Inferred SAND & GRAVEL.	Wet.		7.7 ppm
2				
2.50	Brown sandy GRAVEL of fine to coarse angular to sub rounded flint. Sand is coarse.	Wet.		5.9 ppm 5.8 ppm
3.80	Poor recovery. Inferred gravelly coarse SAND.	Wet.		7.7 ppm
4				
5.20				
5.30	Firm to stiff brown CLAY. End of boring: 5.3 mbgl.	Dry.		
6				

Notes: Hand dug to 1.2 mbgl. Geosock fitted.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 20/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation: 30.16 maOD
Borehole Diameter: 120mm
Installation Diameter: 25mm ID
Slot Size: 1-2mm
Method: Window sample

Coordinates: ,

Borehole Reference:

WS1

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.23	MADE GROUND: Grey/brown slightly clayey sandy coarse gravel of brick and concrete.			10.0 ppm
				9.5 ppm
0.65	Black slightly sandy slightly gravelly SILT. Gravel is fine to medium of flint. Becoming gravelly SILT from 0.7m.			9.3 ppm
0.85	Black/brown slightly clayey slightly sandy GRAVEL of sub-rounded to angular, fine to coarse flint. Becoming clayey from 1.1m			9.3 ppm
				15.1 ppm
1.20	Brown sandy GRAVEL of angular to subangular, fine to coarse flint. END: 2.0m - Refusal on coarse flint.	Wet, NDO.		43 ppm
				53 ppm
				57 ppm
2 2.00				

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 19/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation:
Borehole Diameter: 120mm
Installation Diameter:
Slot Size:
Method: Window sample

Coordinates: ,

Borehole Reference:

WS2

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Grass over soft brown clayey sand with rootlets. (TOPSOIL).			
0.45		MADE GROUND: Soft brown slightly sandy clay with occasional fine - coarse gravel of mixed lithologies. Large brick pieces (up to half brick) from 0.9m.			0.2ppm 0.2ppm 0.2ppm
1.05		MADE GROUND: Brown clayey gravel of sub-angular to sub-rounded fine to coarse brick and stone of mixed lithologies.			0.2ppm
1.20		Brown/beige sandy GRAVEL of angular to subangular fine to medium, occasionally coarse flint. END 1.6m: Refusal on flint gravel.	Dry, NDO.		50ppm 24.4ppm
1.60					
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 19/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation: 31.20 maOD
Borehole Diameter: 120mm
Installation Diameter: 25mm ID
Slot Size: 1-2mm
Method: Window sample

Borehole Reference:

WS3

Coordinates: ,

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: concrete with steel reinforcement bar.			
0.26	MADE GROUND: Soft brown clayey sandy gravel of fine to medium brick and stone of mixed lithologies.			18.2ppm
				18.6ppm
				27.2ppm
0.90	Firm brown slightly gravelly CLAY. Gravel is of fine sub-angular flint.			25.1ppm
	From 1.0m grading to clayey GRAVEL of fine to coarse of sub-angular flint.			21.0ppm
1.20	Brown slightly clayey gravelly medium SAND. Gravel is of fine to medium sub-angular flint.	Wet		51ppm
1.50	Sandy GRAVEL of fine to coarse angular flint.	Moist		55ppm
				40ppm
1.90	Brown slightly gravelly medium SAND. Gravel is of fine to medium sub-angular flint.	Wet		51ppm
2 2.00	END: 2.0m - refusal on flint gravel.			

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 19/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation: 31.19 maOD
Borehole Diameter: 120mm
Installation Diameter: 25mm ID
Slot Size: 1-2mm
Method: Window sample

Coordinates: ,

Borehole Reference:

WS4

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.20		MADE GROUND: Slightly clayey slightly sandy gravel of fine to medium, occassionally coarse brick and stone of mixed lithologies.			18.9ppm
0.45		MADE GROUND: Soft brown slightly sandy gravelly clay. Gravel is fine to coarse of brick and flint. From 0.85m becoming firm to stiff.			18.2ppm 36.1ppm 25.6ppm
1.20		Brown sandy gravelly CLAY. Gravel of fine to coarse flint.	Moist, NDO		46ppm
1.30		Slightly clayey gravelly medium to coarse SAND. Gravel is of fine to coarse sub-angular flint.	Moist, NDO		69ppm
1.60		Brown slightly gravelly SAND. Gravel is of fine to coarse sub-angular flint. END: 2.0m - refusal on coarse flint gravel.	Moist, NDO		75ppm 48ppm
2 2.00					

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS5**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Dark brown clayey gravelly sand with rootlets (TOPSOIL). From 0.5m becoming with gravel of brick. From 0.85m becoming clayey sand with rare gravel of brick.			0.0 ppm 0.0 ppm
0.90		Brown sandy gravelly CLAY. Gravel is of fine to coarse, angular to subangular flint with rare cobbles of flint.			0.0 ppm 0.0 ppm
1.20		Brown/red gravelly medium to coarse SAND. Gravel is of fine to coarse, angular to sub-angular flint. END: 2.0m - refusal on coarse flint gravel.	Dry, NDO.		0.4 ppm 0.4 ppm
2 2.00					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 17/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation:
Borehole Diameter: 120mm
Installation Diameter:
Slot Size:
Method: Window sample

Coordinates: ,

Borehole Reference:

WS6

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Dark brown slightly clayey gravelly sand with rootlets. Gravel is fine to medium of ceramics and brick. From 0.9m becoming clayey.			0.0ppm 0.0ppm 0.0ppm
1.10		MADE GROUND: Sandy gravelly clay. Gravel is medium of brick and flint.			0.0ppm
1.20		Becoming gravelly clay with depth.			
1.30		Dark brown slightly clayey GRAVEL of flint with some rootlets.	Dry, NDO.		
		Red/brown slightly silty slightly gravelly medium SAND. Gravel is of fine to medium flint, occasionally coarse from 1.5m. END: 1.8m - refusal on coarse flint gravel.			0.2ppm
1.80					
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 13/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS7**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Asphalt.			
0.06		MADE GROUND: Broken concrete (cobbles) with brown sand.			
0.30		Grey/brown silty gravelly sand. Gravel is fine to coarse with occasional cobbles of brick, concrete and slag type material.			0.0ppm
					0.1 ppm
0.70		Brown mottled slightly sandy clay. Sand is fine. END: 1.0 m - refusal on flat surface. Possible covered void (duct).	Dry.		
1.00					
2					

Notes: Hand dug to 1.0 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS8**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.10		MADE GROUND: Grey silty gravelly sand. Gravel is fine to medium, sub-angular to sub-rounded of brick and stone (mostly flint). 10cm band of soft grey sandy clay from 0.2 - 0.3m. Becoming clayey slightly gravelly sand with depth.			0.2ppm 0.1ppm
0.80		Firm orange/brown sandy CLAY. From 1.1m becoming slightly gravelly. Gravel is of medium to coarse angular to sub-angular flint.			0.1ppm 0.1ppm
1.20		Brown/orange gravelly medium to coarse SAND. Gravel is fine to coarse of angular to subangular flint. END: 2.3m - refusal on coarse flint gravel.	Dry, NDO.		0.1ppm
2					0.1ppm 0.3ppm
2.30					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS9**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.06		MADE GROUND: inferred demolition rubble.			
0.30		Brown clayey gravelly medium SAND. Gravel fine to medium of flint. From 0.9m becoming slightly gravelly.			0.0ppm 0.0ppm 0.0ppm
1.10		Clayey sandy GRAVEL of fine to coarse, angular to sub-rounded flint.			0.0ppm
1.20		Red/brown gravelly medium to coarse SAND. Gravel is coarse of angular to subangular flint. END: 1.8m - refusal on coarse flint gravel.	Moist, NDO.		0.3ppm
1.80					
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 17/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation:
Borehole Diameter: 120mm
Installation Diameter:
Slot Size:
Method: Window sample

Coordinates: ,

Borehole Reference:

WS10

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.26		MADE GROUND: Brown clayey gravelly fine sand. Gravel is fine to coarse of concrete with fragments of glass and ceramics. Boulder of slag type material at 0.9m.			0.1ppm 0.1ppm
0.95		Clayey sandy GRAVEL of medium to coarse flint.			0.0ppm 0.0ppm
1.20		Brown/red slightly gravelly medium SAND. Gravel is medium to coarse of flint. END: 0.7m - refusal on coarse flint gravel.	Moist, NDO.		0.3ppm
1.70					
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 13/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS11**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.22		MADE GROUND: Dark grey/brown silty sandy gravel of fine to coarse with occasional cobbles of concrete, stone, brick and slag type material. END 0.66m - buried services encountered.	Dry.		0.1ppm 0.3ppm
0.66					
2					

Notes: Hand dug to 0.66 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 20/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS12**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.33		MADE GROUND: Coarse gravel (sub-base).			
0.60		MADE GROUND: Dark brown clayey sandy gravel of fine to coarse brick and stone of mixed lithologies. Becoming gravelly clay with depth.	Wet.		22.0 ppm
0.90		Firm becoming stiff brown slightly gravelly CLAY. Gravel is fine to medium of flint.			19.3 ppm 16.3 ppm
1.22		Brown grey sandy GRAVEL of fine to coarse angular to subangular flint. From 1.50 - 1.65m: red/brown medium SAND. Becoming clayey SAND. END: 2.0m - refusal on coarse flint gravel.	Moist to wet. NDO.		25 ppm 41 ppm
2 2.00					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 17/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation: 31.14 maOD
Borehole Diameter: 120mm
Installation Diameter: 25mm ID
Slot Size: 1-2mm
Method: Window sample

Borehole Reference:

WS13

Coordinates: ,

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.39		MADE GROUND: Brown clayey sandy gravel of fine to medium (occasionally coarse with rare cobbles), sub-angular to sub-rounded brick and stone of mixed lithologies.			0.0ppm
0.65		MADE GROUND: Brown gravelly clay. Gravel is of fine to medium, subangular to sub-rounded brick and stone of mixed lithologies.	Wet at 1.1		
					0.0ppm
1.20		Brown gravelly medium to coarse SAND. Gravel is of fine to coarse, angular to sub-angular flint. END: 1.9m - refusal on coarse flint gravel.	Wet becoming moist, NDO.		0.5ppm
					0.4ppm
1.90					
2					

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS14**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.27		MADE GROUND: Grey/brown clayey sandy gravel. Gravel is fine to coarse, rounded to subangular of mixed lithologies. END: 0.9m - refusal on hard surface - inferred concrete obstruction.	Dry.		0.1ppm 0.1ppm
0.90					
2					

Notes: Hand dug to 0.9 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 18/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS15**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.24		MADE GROUND: Grey/brown slightly clayey sandy gravel. Gravel is fine to coarse, angular to rounded of mixed lithologies.			0.0ppm
0.45		Becoming clayey with depth.			
		Firm to stiff brown very slightly sandy slightly gravelly CLAY. Gravel is of fine to coarse, angular to sub-angular flint.			0.0ppm
					0.0ppm
					0.2ppm
1.40		Grey/brown clayey gravelly medium SAND. Gravel of fine to coarse flint. END: 2.0m - refusal on coarse flint gravel.	Moist, NDO.		0.4ppm
2 2.00					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 18/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS16**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.45		MADE GROUND: Slightly sandy coarse gravel of brick and concrete with occasional cobbles of concrete and half bricks. Becoming clay with brick fragment at base.	Water at 0.72mbgl, with oily sheen.		0.2ppm 0.3ppm 0.2ppm
1.20		Brown/beige slightly sandy gravelly CLAY. Gravel is fine to medium of flint. Becoming more sandy with depth.	Moist, NDO		0.2ppm
1.75		Slightly clayey sandy GRAVEL of coarse, angular flint.	Moist, NDO		
1.80		END: 1.8m - refusal on coarse flint gravel.			
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 18/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation: 31.18 maOD
Borehole Diameter: 120mm
Installation Diameter: 25mm ID
Slot Size: 1-2mm
Method: Window sample

Borehole Reference:

WS17

Coordinates: ,

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.22	MADE GROUND: Grey/brown slightly sandy clayey gravel of fine to coarse subangular to sub-rounded brick and stone of mixed lithologies.			0.3ppm
				0.2ppm
				0.3ppm
1.10	Firm grey gravelly clay. Gravel is fine to coarse of brick and stone of mixed lithologies.			
1.20	Silty coarse gravel of brick and stone of mixed lithologies.			
1.30	Firm beige/brown slightly gravelly sandy CLAY. Gravel is of fine angular to sub-angular flint.	Moist, NDO.		14.8ppm
1.50	Firm sandy CLAY with discrete ~5-10cm bands of fine to medium sand. END: 2.0m - refusal on stiff clay.	Slight black staining apparent in some of the sand (not throughout), NDO.		0.3ppm
2 2.00				

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS18**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
					0.5ppm
0.38		MADE GROUND: Grey slightly sandy slightly clayey gravel. END: 0.65m - sloping concrete obstruction.	Dense black residual tar like coating on some gravel surfaces.		
					1.1ppm
0.65					
2					

Notes: Hand dug to 0.65 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS19**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.17		MADE GROUND: Grey/brown slightly clayey sandy gravel of fine to coarse brick and tarmac, mostly coarse with depth. From 0.7m becoming clayey/with pockets of clay. END: 1.05m - refusal on submerged hard surface - inferred concrete obstruction.	Wet from 0.6m.		0.0ppm 0.0ppm 0.0ppm
1.05					
2					

Notes: Hand dug to 1.05 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 17/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS20**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.08		MADE GROUND: Brown/grey sandy gravel of concrete and brick with occasional fragments of wood and glass. END: 0.95m - refusal on concrete obstruction.	Wet from 0.6m. Iridescent sheen to water in pit. Strong hydrocarbon odour and black tar like staining from 0.9m.		0.1ppm 0.1ppm 0.3ppm 6.0ppm
0.95					
2					

Notes: Hand dug to 0.95 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 18/02/2014 Logged By: NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS21**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.45		MADE GROUND: Dark grey slightly clayey sandy gravel of concrete and slag type material.	Strong unpleasant organic odour. Moist becoming wet from ~0.6m.		0.6ppm
0.85		MADE GROUND: Soft gravelly clay. Gravel is fine to medium, subangular of concrete and slag type material.	Less odour.		0.3ppm 0.3ppm 0.3ppm
1.20		Soft grey/brown CLAY.	Faint black staining and hydrocarbon odour at base of pit.		30ppm
1.70		Decomposing wood layer (5cm) over slightly clayey sandy GRAVEL of fine to medium, angular to subangular flint.			63ppm
1.80		END: 1.8m - refusal on coarse flint gravel.			
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 18/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation: 30.34 maOD
Borehole Diameter: 120mm
Installation Diameter: 25mm ID
Slot Size: 1-2mm
Method: Window sample

Borehole Reference:

WS22

Coordinates: ,

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.43		MADE GROUND: Grey sandy gravel. Becoming clayey from 0.8m.	Water at ~0.65, no odour.		0.1ppm 0.0ppm
0.90		Soft brown/grey slightly gravelly CLAY. Gravel is fine to medium, angular to sub-angular of flint.			0.0ppm 0.0ppm
1.25		Soft grey CLAY. From 1.4m becoming firm, grey/brown mottled CLAY. END: 2.0m - refusal on stiff clay.			36ppm 43ppm
2 2.00					

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 18/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS23**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.17		MADE GROUND: Brown slightly clayey sandy gravel. Gravel is fine to medium, (mostly fine with depth) of mixed lithologies. Concrete slab at 0.55 - 0.6m. With slag type material from 0.6m. END: 0.65m - refusal on inferred concrete obstruction (submerged).	Wet from ~0.5m, with slight sheen and slight hydrocarbon odour.		10.2ppm 0.4ppm
0.65					
2					

Notes: Hand dug to 0.65 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 18/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS24**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.11		MADE GROUND: Slightly clayey sandy gravel of brick, concrete and stone of mixed lithologies. From 0.6m - with asphalt pieces and small pockets of firm dark brown clay.	From 0.25 - 0.6m - very slight hydrocarbon odour.		0.3ppm 0.2ppm 0.2ppm
1.00		Firm dark brown CLAY with large cobble/boulder of concrete.			
1.20		Very soft brown CLAY.	Wet		46ppm
1.50		Clayey GRAVEL of coarse angular to sub-angular flint. END: 1.9m - refusal on coarse flint gravel.	NDO, moist.		48ppm
1.90					
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 18/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation: 30.40 maOD
Borehole Diameter: 120mm
Installation Diameter: 25mm ID
Slot Size: 1-2mm
Method: Window sample

Borehole Reference:

WS25

Coordinates: ,

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete with steel reinforcement bar.			
0.16	MADE GROUND: Broken concrete.			
0.30	MADE GROUND: Gravelly clay. Gravel is fine to coarse of flint and concrete.			0.2ppm
0.45	Firm brown slightly gravelly CLAY. Gravel is of fine to medium, angular to sub-angular flint.	NDO. Wet from 1.2m.		
	Grey mottle from 0.65m.			0.2ppm
	From 1.2m: Becoming soft brown CLAY with occasional coarse flint gravel.			0.2ppm
				51ppm
1.80	Clayey GRAVEL of medium to coarse, sub-rounded black flint.	NDO, wet.		19ppm
2 2.00	END: 2.0m - refusal on coarse flint gravel.			

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 18/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS26**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.25		MADE GROUND: Weak/broken concrete. END: 0.65m - refusal on hard concrete obstruction.	NDO.		0.4ppm
0.65					0.2ppm
2					

Notes: Hand dug to 0.65 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 18/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation:
Borehole Diameter: 120mm
Installation Diameter:
Slot Size:
Method: Window sample

Coordinates: ,

Borehole Reference:

WS27

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.29		MADE GROUND: Weak/broken concrete.			0.2ppm
0.40		END: 0.75m - refusal on hard concrete obstruction.	Dry.		
		MADE GROUND: Brown/grey sandy gravel of fine to medium concrete.			0.2ppm
0.70		MADE GROUND: Concrete with steel reinforcement bar.			
0.75		END: 0.75m - refusal on hard concrete obstruction.			
2					

Notes: Hand dug to 0.75 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 18/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: 29.66 maOD Borehole Diameter: 120mm Installation Diameter: 25mm ID Slot Size: 1-2mm Method: Window sample	Borehole Reference: **WS28**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.29		MADE GROUND: Dark brown slightly clayey sandy gravel. Gravel is fine to coarse, sub-angular to rounded of brick and flint. From 0.7 - 0.75m - frequent brick fragments. From 0.75m - becoming clayey with some slag type material.	Reducing odour from 0.6 - 0.7m. Faint sweet hydrocarbon odour from 0.75 - 0.9m.		0.2ppm 0.3ppm 5.1ppm 4.6ppm 8.0ppm 16.5ppm 13.9ppm
1.15		Soft brown/orange mottle sandy gravelly CLAY. Gravel is of fine angular to sub-angular flint. From 1.4 - 1.8m - soft grey slightly sandy CLAY. From 1.8m becoming firm gravelly CLAY. Gravel is coarse of angular to sub-angular flint. END: 2.0m - refusal on coarse flint gravel.			33ppm 43ppm 55ppm
2 2.00					

Notes: Hand dug to 1.2 mbgl. End of hole at 2mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 16/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation:
Borehole Diameter: 120mm
Installation Diameter:
Slot Size:
Method: Window sample

Coordinates: ,

Borehole Reference:

WS29

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar. Weak/broken from ~0.35m.			
0.40		MADE GROUND: Light brown silty fine sand.	Dry.		31.3ppm
0.50		MADE GROUND: Concrete with steel reinforcement bar (slabs of). END: 0.9m - refusal on hard concrete.			15.8ppm 10.6ppm
0.90					
2					

Notes: Hand dug to 0.9 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 20/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS30**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.31		MADE GROUND: Brown sandy gravel of fine to medium concrete, brick and flint. occasional large fragments of brick. From 0.9m - becoming clayey sandy gravel (as above) with occasional small pockets of clay.	NDO		15.8ppm 20.2ppm 14.2ppm 30.5ppm 24.6ppm 16.0ppm 59ppm
1.25		MADE GROUND: Gravelly silty sand. Gravel of concrete.	Wet. Black stained with slightly tar like residue. No odour.		
1.40		End: 1.4m - refusal on concrete cobble/slab.			
2					

Notes: Hand dug to 1.2 mbgl. Reinstated with bentonite to 1.2 mbgl, backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 20/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: Borehole Diameter: 120mm Installation Diameter: Slot Size: Method: Window sample	Borehole Reference: **WS31**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result	
0		MADE GROUND: Multiple layers of concrete with steel reinforcement (some 1/4 inch reinforcement bar).				
1.80						
2						

Notes: Cored to 1.8mbgl. Reinstated with bentonite to ~1.2 mbgl, backfilled with concrete core sections, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd
Project Number: GCU0124024
Location: Nestle Hayes
Date Drilled: 20/02/2014
Logged By: RV/NR
Driller: Geotron UK Ltd.

Borehole Elevation:
Borehole Diameter: 120mm
Installation Diameter:
Slot Size:
Method: Window sample

Coordinates: ,

Borehole Reference:

WS32

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.40		MADE GROUND: Coarse, angular limestone gravel (sub-base).	Dry		
0.50		Brown sandy gravel fine to coarse brick and flint, with some wood fragments.	Dry, NDO.		65 ppm
0.60		END: 0.6m - refusal on hard concrete obstruction.			
2					

Notes: Hand dug to 0.6 mbgl. Backfilled with arisings, concrete at surface.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 20/02/2014 Logged By: RV/NR Driller: Geotron UK Ltd.	Borehole Elevation: 31.27 maOD Borehole Diameter: 120mm Installation Diameter: 25mm ID Slot Size: 1-2mm Method: Window sample	Borehole Reference: **WS33**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.15		MADE GROUND: Slightly clayey sandy medium gravel of brick and concrete.			29.1 ppm
0.40		MADE GROUND: Soft orange/brown sandy gravelly silt. Gravel is of fine to medium, sub-angular to angular flint.			22.0 ppm
					16.1 ppm
					22.2 ppm
1.15		Grey/beige sandy clayey GRAVEL of fine to coarse flint with some concrete.	Dry, NDO.		
1.30		Brown medium to coarse SAND.	Dry, NDO.		85 ppm
1.40		Becoming clayey SAND.	Dry, NDO.		
		Becoming slightly clayey sandy GRAVEL of fine to coarse, sub-angular to angular flint.			76 ppm
1.60		END: 1.6m - refusal on coarse flint gravel.			
2					

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

Client: Alps Group Ltd Project Number: GCU0124024 Location: Nestle Hayes Date Drilled: 20/02/2014 Logged By: NR Driller: Geotron UK Ltd.	Borehole Elevation: 30.94 maOD Borehole Diameter: 120mm Installation Diameter: 25mm ID Slot Size: 1-2mm Method: Window sample	Borehole Reference: **WS36**
Coordinates: ,		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete with steel reinforcement bar.			
0.10		MADE GROUND: Slightly clayey sandy gravel of fine to coarse brick, concrete and stone (mostly flint). From 0.4 - 0.6m: Older layer of concrete (broken). At 0.8m: 150x100mm concrete slab. At 1.1m: Whole and half bricks.	Wet from 0.7m.		22.3 ppm 16.2 ppm 12.1 ppm 10.0 ppm
1.20		Sandy GRAVEL of fine to coarse subangular to sub-rounded stone of mixed lithologies (mostly flint).	Wet, NDO. Black staining throughout.		43ppm 52ppm 41ppm
2					
2.10					

Notes: Hand dug to 1.2 mbgl. Gas well installed.

Geosyntec consultants

APPENDIX B

Jones Environmental Laboratory

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

4225

Attention :	Nick Roe
Date :	11th December, 2013
Your reference :	GLU0124024
Our reference :	Test Report 13/11160 Batch 1
Location :	Nestle Hayes
Date samples received :	29th November, 2013
Status :	Final report
Issue :	1

Seven samples were received for analysis on 29th November, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Lee-Boden BSc
Project Manager

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GLU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11160

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2	3	4-5	6-7	10-11						
Sample ID	BH9-FOC	BH8-FOC	BH6-FOC	BH7	BH8	BH9						
Depth	3.0	3.5-3.6	3.0	1.6-1.7	1.85-1.9	1.2-1.3						
COC No / misc												
Containers	J	J	J	V J	V J	V J						
Sample Date	27/11/2013	27/11/2013	26/11/2013	27/11/2013	27/11/2013	27/11/2013						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1						
Date of Receipt	29/11/2013	29/11/2013	29/11/2013	29/11/2013	29/11/2013	29/11/2013						

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
Arsenic #M	-	-	-	8.4	7.9	12.9					<0.5	mg/kg	TM30/PM15
Cadmium #M	-	-	-	<0.1	<0.1	<0.1					<0.1	mg/kg	TM30/PM15
Chromium #M	-	-	-	20.2	19.6	22.2					<0.5	mg/kg	TM30/PM15
Copper #M	-	-	-	6	6	12					<1	mg/kg	TM30/PM15
Lead #M	-	-	-	5	8	24					<5	mg/kg	TM30/PM15
Mercury #M	-	-	-	0.2	2.1	4.2					<0.1	mg/kg	TM30/PM15
Nickel #M	-	-	-	16.1	16.8	18.6					<0.7	mg/kg	TM30/PM15
Selenium #M	-	-	-	<1	<1	<1					<1	mg/kg	TM30/PM15
Zinc #M	-	-	-	22	28	34					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #M	-	-	-	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-	-	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Acenaphthene #M	-	-	-	<0.05	<0.05	0.10					<0.05	mg/kg	TM4/PM8
Fluorene #M	-	-	-	<0.04	<0.04	0.35					<0.04	mg/kg	TM4/PM8
Phenanthrene #M	-	-	-	<0.03	<0.03	0.83					<0.03	mg/kg	TM4/PM8
Anthracene #	-	-	-	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #M	-	-	-	<0.03	<0.03	0.07					<0.03	mg/kg	TM4/PM8
Pyrene #	-	-	-	<0.03	<0.03	0.10					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-	-	<0.06	<0.06	<0.06					<0.06	mg/kg	TM4/PM8
Chrysene #M	-	-	-	<0.02	<0.02	0.06					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	-	-	-	<0.07	<0.07	<0.07					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-	-	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	-	-	-	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	-	-	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	-	-	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	-	-	<0.6	<0.6	1.5					<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	-	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	-	<0.02	<0.02	<0.02					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	-	94	96	97					<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	-	-	-	<2	<2	<2					<2	ug/kg	TM15/PM10
Benzene #	-	-	-	<3	<3	<3					<3	ug/kg	TM15/PM10
Toluene #	-	-	-	<3	<3	<3					<3	ug/kg	TM15/PM10
Ethylbenzene #	-	-	-	<3	<3	<3					<3	ug/kg	TM15/PM10
p/m-Xylene #	-	-	-	<6	<6	<6					<6	ug/kg	TM15/PM10
o-Xylene #	-	-	-	<3	<3	<3					<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-	113	115	104					<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	-	-	147	146	115					<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GLU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11160

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2	3	4-5	6-7	10-11						
Sample ID	BH9-FOC	BH8-FOC	BH6-FOC	BH7	BH8	BH9						
Depth	3.0	3.5-3.6	3.0	1.6-1.7	1.85-1.9	1.2-1.3						
COC No / misc												
Containers	J	J	J	V J	V J	V J						
Sample Date	27/11/2013	27/11/2013	26/11/2013	27/11/2013	27/11/2013	27/11/2013						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1						
Date of Receipt	29/11/2013	29/11/2013	29/11/2013	29/11/2013	29/11/2013	29/11/2013						

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #M	-	-	-	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C6-C8 #M	-	-	-	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C8-C10	-	-	-	<0.1	<0.1	6.4					<0.1	mg/kg	TM36/PM12
>C10-C12 #M	-	-	-	<0.2	<0.2	28.1					<0.2	mg/kg	TM5/PM16
>C12-C16 #M	-	-	-	<4	<4	185					<4	mg/kg	TM5/PM16
>C16-C21 #M	-	-	-	<7	<7	238					<7	mg/kg	TM5/PM16
>C21-C35 #M	-	-	-	<7	<7	51					<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	-	-	<19	<19	509					<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	-	-	-	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC7-EC8	-	-	-	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	-	-	-	<0.1	<0.1	0.5					<0.1	mg/kg	TM36/PM12
>EC10-EC12 #M	-	-	-	<0.2	<0.2	6.7					<0.2	mg/kg	TM5/PM16
>EC12-EC16 #M	-	-	-	<4	<4	81					<4	mg/kg	TM5/PM16
>EC16-EC21 #M	-	-	-	<7	<7	113					<7	mg/kg	TM5/PM16
>EC21-EC35 #M	-	-	-	<7	<7	17					<7	mg/kg	TM5/PM16
Total aromatics C5-35	-	-	-	<19	<19	218					<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	-	-	<38	<38	727					<38	mg/kg	TM5/TM36/PM12/PM16
Natural Moisture Content	-	-	-	5.7	9.1	10.8					<0.1	%	PM4/PM0
Hexavalent Chromium	-	-	-	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20
Fraction Organic Carbon	<0.001	<0.001	<0.001	0.001	-	0.003					<0.001	None	TM21/PM24
pH #M	-	-	-	8.26	8.58	8.07					<0.01	pH units	TM73/PM11

Jones Environmental Laboratory

Client Name:	Geosyntec Consulting	**VOC Report :**	**Solid**
Reference:	GLU0124024		
Location:	Nestle Hayes		
Contact:	Nick Roe		
JE Job No.:	13/11160		

Please see attached notes for all abbreviations and acronyms

J E Sample No.	4-5	6-7	10-11								LOD	Units	Method No.
Sample ID	BH7	BH8	BH9										
Depth	1.6-1.7	1.85-1.9	1.2-1.3										
COC No / misc													
Containers	V J	V J	V J										
Sample Date	27/11/2013	27/11/2013	27/11/2013										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	29/11/2013	29/11/2013	29/11/2013										
VOC MS													
Dichlorodifluoromethane	<2	<2	<2								<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2								<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2								<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1								<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7								<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4								<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4								<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3								<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
p/m-Xylene #	<6	<6	<6								<6	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromoform	<3	<3	<3								<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	22								<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2								<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	43								<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	12								<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6								<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	225								<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	203								<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4								<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27								<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	113	115	104								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	147	146	115								<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GLU0124024
Location: Nestle Hayes
Contact: Nick Roe

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.

Signed on behalf of Jones Environmental Laboratory:

Gemma Newsome
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Description	Asbestos Containing Material	Asbestos Results	Asbestos Level	Comments
13/11160	1	BH7	1.6-1.7	5	03/12/13	Soil/Stone	None	NAD	NAD	
13/11160	1	BH8	1.85-1.9	7	03/12/13	Soil/Stone	None	NAD	NAD	
13/11160	1	BH9	1.2-1.3	11	03/12/13	Soil/Stone	None	NAD	NAD	

Client Name: Geosyntec Consulting
Reference: GLU0124024
Location: Nestle Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 13/11160						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/11160

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 13/11160

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.			AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation	Yes	Yes	AR	Yes
TM5/TM36	TPH CWG by GC-FID	PM12/PM16	CWG GC-FID			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes		AR	Yes
TM21	TOC and TC by Combustion	PM24	Eltra preparation			AD	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM15	In-house method based on USEPA 3010A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030S. ISO 17025 and MCERTS accredited extraction method. All accreditation is matrix specific	Yes	Yes	AD	Yes

JE Job No: 13/11160

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes	Yes	AR	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.			AR	Yes
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres	Yes		AR	
TM73	pH in by Metrohm	PM11	1:2.5 soil/water extraction	Yes	Yes	AR	No

Jones Environmental Laboratory

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention :	Nick Roe
Date :	11th December, 2013
Your reference :	GCU0124024
Our reference :	Test Report 13/11208 Batch 1 Schedule B
Location :	Nestle Hayes
Date samples received :	30th November, 2013
Status :	Final report
Issue :	1

Six samples were received for analysis on 30th November, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11208

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2-3	7-8	9-10							LOD	Units	Method No.
Sample ID	BH3- FOC	BH3	BH5	BH1									
Depth	3.0	1.0-1.1	0.9	0.9-1.0									
COC No / misc													
Containers	J	V J	V J	V J									
Sample Date	28/11/2013	28/11/2013	28/11/2013	28/11/2013									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	30/11/2013	30/11/2013	30/11/2013	30/11/2013									
Arsenic #M	-	13.8	-	11.3							<0.5	mg/kg	TM30/PM15
Arsenic	-	-	14.7	-							<0.5	mg/kg	TM30/PM62
Cadmium #M	-	<0.1	-	0.1							<0.1	mg/kg	TM30/PM15
Cadmium	-	-	0.1	-							<0.1	mg/kg	TM30/PM62
Chromium #M	-	33.9	-	22.6							<0.5	mg/kg	TM30/PM15
Chromium	-	-	24.9	-							<0.5	mg/kg	TM30/PM62
Copper #M	-	16	-	7							<1	mg/kg	TM30/PM15
Copper	-	-	48	-							<1	mg/kg	TM30/PM62
Lead #M	-	17	-	13							<5	mg/kg	TM30/PM15
Lead	-	-	188	-							<5	mg/kg	TM30/PM62
Mercury #M	-	0.1	-	11.8							<0.1	mg/kg	TM30/PM15
Mercury	-	-	1.5	-							<0.1	mg/kg	TM30/PM62
Nickel #M	-	37.0	-	20.4							<0.7	mg/kg	TM30/PM15
Nickel	-	-	28.3	-							<0.7	mg/kg	TM30/PM62
Selenium #M	-	<1	-	<1							<1	mg/kg	TM30/PM15
Selenium	-	-	<1	-							<1	mg/kg	TM30/PM62
Zinc #M	-	60	-	45							<5	mg/kg	TM30/PM15
Zinc	-	-	117	-							<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #M	-	<0.04	0.14	<0.04							<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	<0.03	0.05	<0.03							<0.03	mg/kg	TM4/PM8
Acenaphthene #M	-	<0.05	0.15	<0.05							<0.05	mg/kg	TM4/PM8
Fluorene #M	-	<0.04	0.14	<0.04							<0.04	mg/kg	TM4/PM8
Phenanthrene #M	-	<0.03	1.29	0.08							<0.03	mg/kg	TM4/PM8
Anthracene #	-	<0.04	0.28	<0.04							<0.04	mg/kg	TM4/PM8
Fluoranthene #M	-	0.06	2.04	0.07							<0.03	mg/kg	TM4/PM8
Pyrene #	-	0.05	1.67	0.05							<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	<0.06	0.87	<0.06							<0.06	mg/kg	TM4/PM8
Chrysene #M	-	0.04	0.93	<0.02							<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	-	<0.07	1.49	<0.07							<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	<0.04	0.98	<0.04							<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	-	<0.04	0.63	<0.04							<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	<0.04	0.57	<0.04							<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	<0.6	11.2	<0.6							<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	<0.05	1.07	<0.05							<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	<0.02	0.42	<0.02							<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	93	94	98							<0	%	TM4/PM8
EPH (C8-C40) #M	-	<30	198	-							<30	mg/kg	TM5/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11208

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1	2-3	7-8	9-10									
Sample ID	BH3- FOC	BH3	BH5	BH1									
Depth	3.0	1.0-1.1	0.9	0.9-1.0							Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	J	V J	V J	V J									
Sample Date	28/11/2013	28/11/2013	28/11/2013	28/11/2013									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1							LOD	Units	Method No.
Date of Receipt	30/11/2013	30/11/2013	30/11/2013	30/11/2013									
TPH CWG													
Aliphatics													
>C5-C6 #M	-	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>C6-C8 #M	-	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>C8-C10	-	-	-	9.1							<0.1	mg/kg	TM36/PM12
>C10-C12 #M	-	-	-	85.9							<0.2	mg/kg	TM5/PM16
>C12-C16 #M	-	-	-	233							<4	mg/kg	TM5/PM16
>C16-C21 #M	-	-	-	14							<7	mg/kg	TM5/PM16
>C21-C35 #M	-	-	-	345							<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	-	-	687							<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	-	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>EC7-EC8	-	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	-	-	-	0.6							<0.1	mg/kg	TM36/PM12
>EC10-EC12 #M	-	-	-	7.6							<0.2	mg/kg	TM5/PM16
>EC12-EC16 #M	-	-	-	29							<4	mg/kg	TM5/PM16
>EC16-EC21 #M	-	-	-	<7							<7	mg/kg	TM5/PM16
>EC21-EC35 #M	-	-	-	55							<7	mg/kg	TM5/PM16
Total aromatics C5-35	-	-	-	92							<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	-	-	779							<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	-	-	-	<5							<5	ug/kg	TM31/PM12
Benzene #	-	-	-	<5							<5	ug/kg	TM31/PM12
Toluene #	-	-	-	<5							<5	ug/kg	TM31/PM12
Ethylbenzene #	-	-	-	33							<5	ug/kg	TM31/PM12
m/p-Xylene #	-	-	-	185							<5	ug/kg	TM31/PM12
o-Xylene #	-	-	-	355							<5	ug/kg	TM31/PM12
Natural Moisture Content	-	23.9	NDP	16.3							<0.1	%	PM4/PM0
Hexavalent Chromium	-	<0.3	<0.3	<0.3							<0.3	mg/kg	TM38/PM20
Fraction Organic Carbon	<0.001	0.003	NDP	0.003							<0.001	None	TM21/PM24
pH #M	-	7.96	8.19	9.33							<0.01	pH units	TM73/PM11

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11208

VOC Report : **Solid**

J E Sample No.	2-3	7-8	9-10									
Sample ID	BH3	BH5	BH1									
Depth	1.0-1.1	0.9	0.9-1.0									
COC No / misc												
Containers	V J	V J	V J									
Sample Date	28/11/2013	28/11/2013	28/11/2013									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	30/11/2013	30/11/2013	30/11/2013									

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2								<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2								<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2								<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1								<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7								<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4								<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4								<4	ug/kg	TM15/PM10
Toluene #	5	43	13								<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
p/m-Xylene #	<6	9	9								<6	ug/kg	TM15/PM10
o-Xylene #	<3	<3	5								<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromoform	<3	<3	<3								<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	29								<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2								<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	80								<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	13								<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6								<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	142								<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	293								<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4								<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27								<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7								<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	112	105	89								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	141	114	107								<0	%	TM15/PM10

Client Name: Geosyntec Consulting **Matrix : Solid**
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
13/11208	1	BH5	0.9	7-8	Asbestos detected in sample

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 13/11208						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/11208

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 13/11208

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.			AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation	Yes	Yes	AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5/TM36	TPH CWG by GC-FID	PM12/PM16	CWG GC-FID			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes		AR	Yes
TM21	TOC and TC by Combustion	PM24	Eltra preparation			AD	Yes

JE Job No: 13/11208

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM15	In-house method based on USEPA 3010A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030S. ISO 17025 and MCERTS accredited extraction method. All accreditation is matrix specific	Yes	Yes	AD	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM62	Aqua Regia extraction (Soils) (as received sample)			AR	Yes
TM31	In-house method based on USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID. Accredited to ISO 17025 for soils and waters and MCERTS accredited for soils. Accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM31	In-house method based on USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID. Accredited to ISO 17025 for soils and waters and MCERTS accredited for soils. Accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes		AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes	Yes	AR	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.			AR	Yes
TM73	pH in by Metrohm	PM11	1:2.5 soil/water extraction	Yes	Yes	AR	No

Jones Environmental Laboratory

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention :	Nick Roe
Date :	6th December, 2013
Your reference :	GCU0124024
Our reference :	Test Report 13/11208 Batch 1 Schedule A
Location :	Nestle Hayes
Date samples received :	30th November, 2013
Status :	Final report
Issue :	1

Six samples were received for analysis on 30th November, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.

Signed on behalf of Jones Environmental Laboratory:

Gemma Newsome
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Description	Asbestos Containing Material	Asbestos Results	Asbestos Level	Comments
13/11208	1	BH3	1.0-1.1	3	04/12/13	Soil-Silt/Clay/Brick/Stone	None	NAD	NAD	
13/11208	1	BH5	0.9	8	04/12/13	Soil-Silt/Clay/Brick/Stone	Asbestos Cement	Chrysotile	Quantifiable	Debris
13/11208	1	BH1	0.9-1.0	10	04/12/13	Soil-Silt/Clay/Brick/Stone	None	NAD	NAD	

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 13/11208						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/11208

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 13/11208

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres	Yes		AR	

Jones Environmental Laboratory

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention :	Nick Roe
Date :	18th December, 2013
Your reference :	GCU0124024
Our reference :	Test Report 13/11208 Batch 1 Schedule C
Location :	Nestle Hayes
Date samples received :	30th November, 2013
Status :	Final report
Issue :	1

Six samples were received for analysis on 30th November, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11208

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	7-8										Please see attached notes for all abbreviations and acronyms		
Sample ID	BH5												
Depth	0.9												
COC No / misc													
Containers	V J												
Sample Date	28/11/2013												
Sample Type	Soil												
Batch Number	1										LOD	Units	Method No.
Date of Receipt	30/11/2013												
Asbestos PCOM Quantification (Fibres)	<0.001										<0.001	mass %	TM65/PM42
Asbestos Gravimetric & PCOM Total	0.003										<0.001	mass %	TM65/PM42
Asbestos Cement (% Asbestos)	0.003										<0.001	mass %	TM65/PM42
Asbestos Gravimetric Quantification (ACMs)	0.003										<0.001	mass %	TM65/PM42

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 13/11208						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/11208

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 13/11208

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	Yes
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

4225

Attention :	Nick Roe
Date :	3rd March, 2014
Your reference :	GCU0124024-2B
Our reference :	Test Report 14/2966 Batch 1 Schedule A
Location :	Hayes
Date samples received :	18th February, 2014
Status :	Final report
Issue :	1

Fourteen samples were received for analysis on 18th February, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	LOD	Units	Method No.
Sample ID	SO-WS2	SO-WS5	SO-WS6	SO-WS7	SO-WS8	SO-WS9	SO-WS10	SO-WS11	SO-WS13	SO-WS14			
Depth	0.9-1.0	0.7-0.8	1.0-1.1	0.7-0.8	0.8-0.9	0.3-0.4	0.7-0.8	0.6-0.7	0.7-0.8	0.8-0.9			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	14/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	14/02/2014	14/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014			
Arsenic #M	11.2	20.8	12.2	16.2	21.3	37.1	79.8	-	12.8	11.3	<0.5	mg/kg	TM30/PM15
Arsenic	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Cadmium #M	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	-	<0.1	0.2	<0.1	mg/kg	TM30/PM15
Cadmium	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium #M	41.8	52.7	144.2	61.8	84.1	66.5	86.7	-	61.8	189.5	<0.5	mg/kg	TM30/PM15
Chromium	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper #M	19	35	13	34	17	103	188	-	18	17	<1	mg/kg	TM30/PM15
Copper	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead #M	40	146	40	192	20	352	701	-	24	15	<5	mg/kg	TM30/PM15
Lead	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury #M	0.2	0.5	0.1	0.2	0.4	<0.1	1.0	-	7.3	0.5	<0.1	mg/kg	TM30/PM15
Mercury	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel #M	21.4	24.0	9.0	28.4	34.8	20.0	34.8	-	24.2	16.7	<0.7	mg/kg	TM30/PM15
Nickel	-	-	-	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium #M	<1	<1	<1	<1	<1	<1	<1	-	<1	<1	<1	mg/kg	TM30/PM15
Selenium	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc #M	69	82	35	76	62	89	153	-	69	113	<5	mg/kg	TM30/PM15
Zinc	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #M	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	-	<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	<0.04	mg/kg	TM4/PM8
Phenanthrene #M	<0.03	0.04	<0.03	<0.03	<0.03	0.14	0.18	-	<0.03	-	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	<0.04	mg/kg	TM4/PM8
Fluoranthene #M	<0.03	0.05	<0.03	<0.03	<0.03	0.18	0.31	-	<0.03	-	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	0.05	<0.03	<0.03	<0.03	0.16	0.30	-	<0.03	-	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	0.07	0.18	-	<0.06	-	<0.06	mg/kg	TM4/PM8
Chrysene #M	<0.02	0.07	<0.02	<0.02	<0.02	0.11	0.25	-	<0.02	-	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	<0.07	0.10	<0.07	<0.07	<0.07	0.14	0.34	-	<0.07	-	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.15	-	<0.04	-	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.10	-	<0.04	-	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	0.05	0.11	-	<0.04	-	<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6	<0.6	<0.6	0.9	1.9	-	<0.6	-	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	0.07	<0.05	<0.05	<0.05	0.10	0.24	-	<0.05	-	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	0.03	<0.02	<0.02	<0.02	0.04	0.10	-	<0.02	-	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	109	102	103	97	105	104	100	-	104	-	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #M	-	<6	-	-	-	-	-	-	<6	<6	<6	ug/kg	TM15/PM10
Benzene #M	-	<5	-	-	-	-	-	-	<5	<5	<5	ug/kg	TM15/PM10
Toluene #M	-	<3	-	-	-	-	-	-	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #M	-	<3	-	-	-	-	-	-	<3	<3	<3	ug/kg	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	LOD	Units	Method No.
Sample ID	SO-WS2	SO-WS5	SO-WS6	SO-WS7	SO-WS8	SO-WS9	SO-WS10	SO-WS11	SO-WS13	SO-WS14			
Depth	0.9-1.0	0.7-0.8	1.0-1.1	0.7-0.8	0.8-0.9	0.3-0.4	0.7-0.8	0.6-0.7	0.7-0.8	0.8-0.9			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	14/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	14/02/2014	14/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014			
p/m-Xylene #M	-	<4	-	-	-	-	-	-	<4	<4	<4	ug/kg	TM15/PM10
o-Xylene #M	-	<4	-	-	-	-	-	-	<4	<4	<4	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	107	-	-	-	-	-	-	108	109	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	117	-	-	-	-	-	-	131	121	<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #M	-	<0.1	-	-	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #M	-	<0.1	-	-	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	-	-	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #M	-	<0.2	-	-	-	-	-	-	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>C12-C16 #M	-	<4	-	-	-	-	-	-	<4	20	<4	mg/kg	TM5/PM16
>C16-C21 #M	-	<7	-	-	-	-	-	-	<7	96	<7	mg/kg	TM5/PM16
>C21-C35 #M	-	<7	-	-	-	-	-	-	<7	77	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	<19	-	-	-	-	-	-	<19	193	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	-	<0.1	-	-	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8	-	<0.1	-	-	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	-	<0.1	-	-	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12	-	<0.2	-	-	-	-	-	-	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>EC12-EC16	-	<4	-	-	-	-	-	-	<4	<4	<4	mg/kg	TM5/PM16
>EC16-EC21	-	<7	-	-	-	-	-	-	<7	16	<7	mg/kg	TM5/PM16
>EC21-EC35	-	<7	-	-	-	-	-	-	<7	54	<7	mg/kg	TM5/PM16
Total aromatics C5-35	-	<19	-	-	-	-	-	-	<19	70	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	<38	-	-	-	-	-	-	<38	263	<38	mg/kg	TM5/TM36/PM12/PM16
PCB 28 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 52 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 101 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 118 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 138 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 153 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 180 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	-	-	-	-	-	-	-	-	<35	ug/kg	TM17/PM8
Natural Moisture Content	21.1	<0.1	8.3	<0.1	16.4	<0.1	27.4	-	22.2	11.0	<0.1	%	PM4/PM0
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	13.8	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	<0.0015	-	0.0186	-	0.0710	-	-	0.0258	-	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	-	-	-	-	-	-	-	-	-	<0.0015	g/l	TM38/PM60
Fraction Organic Carbon	-	-	-	0.012	-	0.015	-	0.033	0.003	0.004	<0.001	None	TM21/PM24
pH #M	-	-	-	8.25	-	10.38	-	9.63	8.43	8.30	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	LOD	Units	Method No.
Sample ID	SO-WS2	SO-WS5	SO-WS6	SO-WS7	SO-WS8	SO-WS9	SO-WS10	SO-WS11	SO-WS13	SO-WS14			
Depth	0.9-1.0	0.7-0.8	1.0-1.1	0.7-0.8	0.8-0.9	0.3-0.4	0.7-0.8	0.6-0.7	0.7-0.8	0.8-0.9			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	14/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	13/02/2014	14/02/2014	14/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014			
Sample Type	Clay	Clay	Clay	Clayey Loam	Loam	Clayey Loam	Sand	Sandy Loam	Clay	Silt		None	PM13/PM0
Sample Colour	Light Brown	Medium Brown	Light Brown	Dark Brown	Orange	Dark Brown	Red	Dark Grey	Light Brown	Dark Brown		None	PM13/PM0
Other Items	NA	stones, roots	stones	STONES	STONES	STONES,BRICK	MOSTLY STONES	STONES,SLATE,CLINKER	N/A	MOSTLY STONES		None	PM13/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	21-22	23-24	25-26	27-28							LOD	Units	Method No.
Sample ID	SO-WS15	SO-WS16	SO-WS17	SO-WS18									
Depth	0.4-0.5	0.9-1.0	0.9-1.0	0.4-0.5									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	14/02/2014	14/02/2014	14/02/2014	14/02/2014									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	18/02/2014	18/02/2014	18/02/2014	18/02/2014									
Arsenic #M	-	28.0	-	NDP							<0.5	mg/kg	TM30/PM15
Arsenic	-	-	-	7.7							<0.5	mg/kg	TM30/PM62
Cadmium #M	-	0.6	-	NDP							<0.1	mg/kg	TM30/PM15
Cadmium	-	-	-	0.2							<0.1	mg/kg	TM30/PM62
Chromium #M	-	29.9	-	NDP							<0.5	mg/kg	TM30/PM15
Chromium	-	-	-	22.6							<0.5	mg/kg	TM30/PM62
Copper #M	-	73	-	NDP							<1	mg/kg	TM30/PM15
Copper	-	-	-	76							<1	mg/kg	TM30/PM62
Lead #M	-	321	-	NDP							<5	mg/kg	TM30/PM15
Lead	-	-	-	44							<5	mg/kg	TM30/PM62
Mercury #M	-	0.3	-	NDP							<0.1	mg/kg	TM30/PM15
Mercury	-	-	-	0.1							<0.1	mg/kg	TM30/PM62
Nickel #M	-	23.3	-	NDP							<0.7	mg/kg	TM30/PM15
Nickel	-	-	-	23.1							<0.7	mg/kg	TM30/PM62
Selenium #M	-	<1	-	NDP							<1	mg/kg	TM30/PM15
Selenium	-	-	-	<1							<1	mg/kg	TM30/PM62
Zinc #M	-	96	-	NDP							<5	mg/kg	TM30/PM15
Zinc	-	-	-	168							<5	mg/kg	TM30/PM62
PAH MS				x20 Dilution									
Naphthalene #M	-	-	-	<0.80							<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-	-	11.17							<0.03	mg/kg	TM4/PM8
Acenaphthene #M	-	-	-	1.37							<0.05	mg/kg	TM4/PM8
Fluorene #M	-	-	-	1.66							<0.04	mg/kg	TM4/PM8
Phenanthrene #M	-	-	-	14.04							<0.03	mg/kg	TM4/PM8
Anthracene #	-	-	-	12.49							<0.04	mg/kg	TM4/PM8
Fluoranthene #M	-	-	-	45.39							<0.03	mg/kg	TM4/PM8
Pyrene #	-	-	-	79.31							<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-	-	20.86							<0.06	mg/kg	TM4/PM8
Chrysene #M	-	-	-	25.85							<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	-	-	-	64.55							<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-	-	41.47							<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	-	-	-	32.51							<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	-	-	3.69							<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	-	-	30.27							<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	-	-	384.6							<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	-	46.48							<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	-	18.07							<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	-	99							<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #M	<6	-	-	<6							<6	ug/kg	TM15/PM10
Benzene #M	<5	-	-	<5							<5	ug/kg	TM15/PM10
Toluene #M	<3	-	-	11							<3	ug/kg	TM15/PM10
Ethylbenzene #M	<3	-	-	18							<3	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	21-22	23-24	25-26	27-28							LOD	Units	Method No.
Sample ID	SO-WS15	SO-WS16	SO-WS17	SO-WS18									
Depth	0.4-0.5	0.9-1.0	0.9-1.0	0.4-0.5									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	14/02/2014	14/02/2014	14/02/2014	14/02/2014									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	18/02/2014	18/02/2014	18/02/2014	18/02/2014									
p/m-Xylene #M	<4	-	-	34							<4	ug/kg	TM15/PM10
o-Xylene #M	<4	-	-	55							<4	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	108	-	-	58							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	134	-	-	77							<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	-	3.2							<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	-	-	70.7							<0.2	mg/kg	TM5/PM16
>C12-C16 #M	<4	-	-	1062							<4	mg/kg	TM5/PM16
>C16-C21 #M	<7	-	-	2315							<7	mg/kg	TM5/PM16
>C21-C35 #M	<7	-	-	4009							<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	-	-	7460							<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	-	-	<0.1							<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	-	-	0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	-	-	<1.2							<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	-	-	424							<4	mg/kg	TM5/PM16
>EC16-EC21	<7	-	-	2050							<7	mg/kg	TM5/PM16
>EC21-EC35	<7	-	-	7543							<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	-	-	10017							<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	-	-	17477							<38	mg/kg	TM5/TM36/PM12/PM16
				x100 Dilution									
PCB 28 #	-	<5	<5	<500							<5	ug/kg	TM17/PM8
PCB 52 #	-	<5	<5	<500							<5	ug/kg	TM17/PM8
PCB 101 #	-	<5	<5	<500							<5	ug/kg	TM17/PM8
PCB 118 #	-	<5	<5	<500							<5	ug/kg	TM17/PM8
PCB 138 #	-	<5	<5	<500							<5	ug/kg	TM17/PM8
PCB 153 #	-	<5	<5	<500							<5	ug/kg	TM17/PM8
PCB 180 #	-	<5	<5	<500							<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<35	<35	<3500							<35	ug/kg	TM17/PM8
Natural Moisture Content	20.3	0.9	21.5	NDP							<0.1	%	PM4/PM0
Hexavalent Chromium	-	<0.3	-	<0.3							<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	0.0489	-	-	NDP							<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	-	-	0.2846							<0.0015	g/l	TM38/PM60
Fraction Organic Carbon	-	-	-	NDP							<0.001	None	TM21/PM24
pH #M	-	-	-	9.01							<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	21-22	23-24	25-26	27-28									
Sample ID	SO-WS15	SO-WS16	SO-WS17	SO-WS18									
Depth	0.4-0.5	0.9-1.0	0.9-1.0	0.4-0.5									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	14/02/2014	14/02/2014	14/02/2014	14/02/2014									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	18/02/2014	18/02/2014	18/02/2014	18/02/2014									

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
Sample Type	Clay	Sand	Clay	Silt								None	PM13/PM0
Sample Colour	Medium Brown	Light Brown	Medium Brown	Black								None	PM13/PM0
Other Items	STONES	stones, brick, gravel	STONES	MOSTLY OILY STONES								None	PM13/PM0

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

VOC Report : **Solid**

J E Sample No.	3-4	11-12	13-14	17-18	19-20	21-22	27-28				LOD	Units	Method No.
Sample ID	SO-WS5	SO-WS9	SO-WS10	SO-WS13	SO-WS14	SO-WS15	SO-WS18						
Depth	0.7-0.8	0.3-0.4	0.7-0.8	0.7-0.8	0.8-0.9	0.4-0.5	0.4-0.5						
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J						
Sample Date	13/02/2014	13/02/2014	13/02/2014	14/02/2014	14/02/2014	14/02/2014	14/02/2014						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014						
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #M	<6	<6	<6	<6	<6	<6	<6				<6	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1				<1	ug/kg	TM15/PM10
Chloroethane #M	<6	<6	<6	<6	<6	<6	<6				<6	ug/kg	TM15/PM10
Trichlorofluoromethane #M	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #M	<6	<6	<6	<6	<6	<6	<6				<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7	<7	<7	<7	<7				<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,1-Dichloroethane #M	<6	<6	<6	<6	<6	<6	<6				<6	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #M	<7	<7	<7	<7	<7	<7	<7				<7	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Bromochloromethane #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Chloroform #M	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
1,1,1-Trichloroethane #M	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Carbon tetrachloride #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2-Dichloroethane #M	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
Benzene #M	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
Trichloroethene (TCE) #M	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
1,2-Dichloropropane #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Dibromomethane #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Bromodichloromethane #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Toluene #M	<3	<3	<3	<3	<3	<3	11				<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,3-Dichloropropane #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Dibromochloromethane #M	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Chlorobenzene #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #M	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
Ethylbenzene #M	<3	<3	<3	<3	<3	<3	18				<3	ug/kg	TM15/PM10
p/m-Xylene #M	<4	<4	<4	<4	<4	<4	34				<4	ug/kg	TM15/PM10
o-Xylene #M	<4	<4	<4	<4	<4	<4	55				<4	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Bromoform	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	17				<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #M	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	37				<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	73				<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6	209				<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	103				<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #M	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7				<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27	1393				<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7				<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	107	118	113	108	109	108	58				<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	117	118	109	131	121	134	77				<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.

Signed on behalf of Jones Environmental Laboratory:

Gemma Newsome
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Description	Asbestos Containing Material	Asbestos Results	Asbestos Level	Comments
14/2966	1	SO-WS2	0.9-1.0	2	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS5	0.7-0.8	4	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS6	1.0-1.1	6	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS7	0.7-0.8	8	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS8	0.8-0.9	10	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS9	0.3-0.4	12	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS10	0.7-0.8	14	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS11	0.6-0.7	16	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS13	0.7-0.8	18	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS14	0.8-0.9	20	26/02/14	Soil/Stone	None	NAD	NAD	
14/2966	1	SO-WS15	0.4-0.5	22	26/02/14	soil/clay	None	NAD	NAD	
14/2966	1	SO-WS16	0.9-1.0	24	26/02/14	soil/clay	None	NAD	NAD	
14/2966	1	SO-WS17	0.9-1.0	26	26/02/14	soil/clay	None	NAD	NAD	
14/2966	1	SO-WS18	0.4-0.5	28	26/02/14	soil	Insulation	Amosite, Chrysotile	Quantifiable	

Client Name: Geosyntec Consulting **Matrix : Solid**
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
14/2966	1	SO-WS18	0.4-0.5	27-28	Asbestos detected in sample

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/2966						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/2966

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 14/2966

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.			AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation			AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation	Yes	Yes	AR	Yes
TM5/TM36	TPH CWG by GC-FID	PM12/PM16	CWG GC-FID			AR	Yes
PM13	Soil Typing for MCERTS	PM0	No preparation is required.			AR	
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes		AR	Yes

JE Job No: 14/2966

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes	Yes	AR	Yes
TM17	PCB 7 Congeners and WHO 12 PCBs by GC-MS	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes
TM21	TOC and TC by Combustion	PM24	Eltra preparation			AD	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM15	In-house method based on USEPA 3010A. Acid digestion of dried and crushed solid samples using Aqua Regia reflux.	Yes	Yes	AD	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM62	Aqua Regia extraction (Soils) (as received sample)			AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes	Yes	AR	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.	Yes	Yes	AD	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.			AR	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM60	1:2 soil to water extraction (as received sample)	Yes	Yes	AR	Yes

JE Job No: 14/2966

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres	Yes		AR	
TM73	pH in by Metrohm	PM11	1:2.5 soil/water extraction	Yes	Yes	AR	No

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

4225

Attention :	Nick Roe
Date :	7th March, 2014
Your reference :	GCU0124024
Our reference :	Test Report 14/3202 Batch 1
Location :	Hayes 2B
Date samples received :	22nd February, 2014
Status :	Final report
Issue :	1

Four samples were received for analysis on 22nd February, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3202

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	2-3	4-5											
Sample ID	SO-WS32	SO-WS33											
Depth	0.5-0.6	1.3-1.4									Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J											
Sample Date	20/02/2014	20/02/2014											
Sample Type	Soil	Soil											
Batch Number	1	1									LOD	Units	Method No.
Date of Receipt	22/02/2014	22/02/2014											
Arsenic #M	9.8	8.0									<0.5	mg/kg	TM30/PM15
Cadmium #M	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Chromium #M	19.1	15.6									<0.5	mg/kg	TM30/PM15
Copper #M	42	10									<1	mg/kg	TM30/PM15
Lead #M	33	6									<5	mg/kg	TM30/PM15
Mercury #M	0.2	0.2									<0.1	mg/kg	TM30/PM15
Nickel #M	13.8	13.1									<0.7	mg/kg	TM30/PM15
Selenium #M	<1	<1									<1	mg/kg	TM30/PM15
Zinc #M	60	20									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #M	0.05	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.28	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #M	0.23	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #M	0.16	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #M	4.42	<0.03									<0.03	mg/kg	TM4/PM8
Anthracene #	1.24	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #M	8.72	<0.03									<0.03	mg/kg	TM4/PM8
Pyrene #	7.26	<0.03									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	3.50	<0.06									<0.06	mg/kg	TM4/PM8
Chrysene #M	3.14	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	5.15	<0.07									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	3.14	<0.04									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	2.00	<0.04									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.73	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.88	<0.04									<0.04	mg/kg	TM4/PM8
PAH 16 Total	41.9	<0.6									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	3.71	<0.05									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	1.44	<0.02									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	107	111									<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #M	<6	<6									<6	ug/kg	TM15/PM10
Benzene #M	<5	<5									<5	ug/kg	TM15/PM10
Toluene #M	<3	<3									<3	ug/kg	TM15/PM10
Ethylbenzene #M	<3	<3									<3	ug/kg	TM15/PM10
p/m-Xylene #M	<4	<4									<4	ug/kg	TM15/PM10
o-Xylene #M	<4	<4									<4	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	103	107									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	108	128									<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3202

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	2-3	4-5											
Sample ID	SO-WS32	SO-WS33											
Depth	0.5-0.6	1.3-1.4									Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J											
Sample Date	20/02/2014	20/02/2014											
Sample Type	Soil	Soil											
Batch Number	1	1									LOD	Units	Method No.
Date of Receipt	22/02/2014	22/02/2014											
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	<0.2									<0.2	mg/kg	TM5/PM16
>C12-C16 #M	6	<4									<4	mg/kg	TM5/PM16
>C16-C21 #M	33	<7									<7	mg/kg	TM5/PM16
>C21-C35 #M	121	<7									<7	mg/kg	TM5/PM16
Total aliphatics C5-35	160	<19									<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	<0.2									<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	<4									<4	mg/kg	TM5/PM16
>EC16-EC21	32	<7									<7	mg/kg	TM5/PM16
>EC21-EC35	150	<7									<7	mg/kg	TM5/PM16
Total aromatics C5-35	182	<19									<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	342	<38									<38	mg/kg	TM5/TM36/PM12/PM16
Natural Moisture Content	8.2	6.7									<0.1	%	PM4/PM0
Hexavalent Chromium	0.5	<0.3									<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	0.1996	-									<0.0015	g/l	TM38/PM20
Sample Type	Sandy Loam	Clayey Sand										None	PM13/PM0
Sample Colour	Medium Brown	Dark Brown										None	PM13/PM0
Other Items	STONES,ROOTS	STONES,SLATE,ROOT										None	PM13/PM0

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3202

VOC Report : **Solid**

J E Sample No.	2-3	4-5											
Sample ID	SO-WS32	SO-WS33											
Depth	0.5-0.6	1.3-1.4											
COC No / misc													
Containers	V J	V J											
Sample Date	20/02/2014	20/02/2014											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	22/02/2014	22/02/2014											

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2									<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #M	<6	<6									<6	ug/kg	TM15/PM10
Chloromethane #	<3	<3									<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2									<2	ug/kg	TM15/PM10
Bromomethane	<1	<1									<1	ug/kg	TM15/PM10
Chloroethane #M	<6	<6									<6	ug/kg	TM15/PM10
Trichlorofluoromethane #M	<3	<3									<3	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #M	<6	<6									<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7									<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3									<3	ug/kg	TM15/PM10
1,1-Dichloroethane #M	<6	<6									<6	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #M	<7	<7									<7	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4									<4	ug/kg	TM15/PM10
Bromochloromethane #M	<4	<4									<4	ug/kg	TM15/PM10
Chloroform #M	<5	<5									<5	ug/kg	TM15/PM10
1,1,1-Trichloroethane #M	<5	<5									<5	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3									<3	ug/kg	TM15/PM10
Carbon tetrachloride #M	<4	<4									<4	ug/kg	TM15/PM10
1,2-Dichloroethane #M	<5	<5									<5	ug/kg	TM15/PM10
Benzene #M	<5	<5									<5	ug/kg	TM15/PM10
Trichloroethene (TCE) #M	<5	<5									<5	ug/kg	TM15/PM10
1,2-Dichloropropane #M	<4	<4									<4	ug/kg	TM15/PM10
Dibromomethane #M	<4	<4									<4	ug/kg	TM15/PM10
Bromodichloromethane #M	<4	<4									<4	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4									<4	ug/kg	TM15/PM10
Toluene #M	<3	<3									<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3									<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #M	<4	<4									<4	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3									<3	ug/kg	TM15/PM10
1,3-Dichloropropane #M	<4	<4									<4	ug/kg	TM15/PM10
Dibromochloromethane #M	<5	<5									<5	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3									<3	ug/kg	TM15/PM10
Chlorobenzene #M	<4	<4									<4	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #M	<5	<5									<5	ug/kg	TM15/PM10
Ethylbenzene #M	<3	<3									<3	ug/kg	TM15/PM10
p/m-Xylene #M	<4	<4									<4	ug/kg	TM15/PM10
o-Xylene #M	<4	<4									<4	ug/kg	TM15/PM10
Styrene	<3	<3									<3	ug/kg	TM15/PM10
Bromoform	<4	<4									<4	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3									<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #M	<3	<3									<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2									<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #M	<4	<4									<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4									<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3									<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3									<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3									<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5									<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6									<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4									<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4									<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #M	<4	<4									<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4									<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4									<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #M	<4	<4									<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4									<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7									<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4									<4	ug/kg	TM15/PM10
Naphthalene	<27	<27									<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7									<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	103	107									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	108	128									<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.

Signed on behalf of Jones Environmental Laboratory:

Gemma Newsome
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Description	Asbestos Containing Material	Asbestos Results	Asbestos Level	Comments
14/3202	1	SO-WS32	0.5-0.6	3	27/02/14	soil	None	NAD	NAD	

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/3202						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/3202

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 14/3202

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.			AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation			AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation	Yes	Yes	AR	Yes
TM5/TM36	TPH CWG by GC-FID	PM12/PM16	CWG GC-FID			AR	Yes
PM13	Soil Typing for MCERTS	PM0	No preparation is required.			AR	
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes		AR	Yes

JE Job No: 14/3202

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes	Yes	AR	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM15	In-house method based on USEPA 3010A. Acid digestion of dried and crushed solid samples using Aqua Regia reflux.	Yes	Yes	AD	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes	Yes	AR	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.	Yes	Yes	AD	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.			AR	Yes
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres	Yes		AR	

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

4225

Attention :	Nick Roe
Date :	6th March, 2014
Your reference :	GCU0124024
Our reference :	Test Report 14/3128 Batch 1
Location :	Hayes 2B
Date samples received :	21st February, 2014
Status :	Final report
Issue :	1

Thirty two samples were received for analysis on 21st February, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	21-22	LOD	Units	Method No.
Sample ID	SO-WS19S1702140.7-0.8	SO-WS20S1702140.6-0.7	SO-WS21S1702140.7-0.8	SO-WS22S1802140.9-1.0	SO-WS23S1802140.3-0.4	SO-WS24S1802140.9-1.0	SO-WS25S1802140.6-0.7	SO-WS27S1802140.6-0.7	SO-WS28S1802140.6-0.7	SO-WS4S1802140.7-0.8			
Depth	0.7-0.8	0.6-0.7	0.7-0.8	0.9-1.0	0.3-0.4	0.9-1.0	0.6-0.7	0.6-0.7	0.6-0.7	0.7-0.8			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	17/02/2014	17/02/2014	17/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014			
Arsenic #M	11.0	NDP	NDP	9.6	6.7	14.1	13.9	6.2	12.1	21.0	<0.5	mg/kg	TM30/PM15
Arsenic	-	6.8	15.1	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Cadmium #M	<0.1	NDP	NDP	<0.1	0.4	0.4	0.1	0.1	0.3	0.5	<0.1	mg/kg	TM30/PM15
Cadmium	-	<0.1	0.3	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium #M	21.5	NDP	NDP	33.9	10.4	24.1	37.7	13.9	21.7	27.9	<0.5	mg/kg	TM30/PM15
Chromium	-	12.5	24.5	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper #M	19	NDP	NDP	17	7	104	29	12	23	65	<1	mg/kg	TM30/PM15
Copper	-	21	57	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead #M	22	NDP	NDP	14	36	766	69	57	121	239	<5	mg/kg	TM30/PM15
Lead	-	46	98	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury #M	47.1	NDP	NDP	<0.1	<0.1	2.7	0.4	<0.1	0.3	1.2	<0.1	mg/kg	TM30/PM15
Mercury	-	3.6	10.2	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel #M	15.2	NDP	NDP	21.5	6.9	17.2	25.6	10.9	15.7	23.1	<0.7	mg/kg	TM30/PM15
Nickel	-	9.3	24.5	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium #M	<1	NDP	NDP	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Selenium	-	<1	<1	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc #M	62	NDP	NDP	65	85	242	100	37	64	118	<5	mg/kg	TM30/PM15
Zinc	-	68	199	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #M	<0.04	0.46	0.08	<0.04	0.16	0.19	<0.04	<0.04	5.34	0.08	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	0.23	<0.03	<0.03	0.05	0.23	<0.03	0.06	24.74	0.13	<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	0.45	<0.05	<0.05	0.08	0.26	<0.05	<0.05	34.36	0.15	<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	0.49	<0.04	<0.04	0.07	0.26	<0.04	<0.04	49.14	0.15	<0.04	mg/kg	TM4/PM8
Phenanthrene #M	0.08	2.41	0.25	<0.03	0.62	2.69	0.15	0.69	278.80	1.89	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	0.91	0.08	<0.04	0.15	0.74	0.05	0.15	119.72	0.61	<0.04	mg/kg	TM4/PM8
Fluoranthene #M	0.14	2.59	0.34	<0.03	0.84	4.67	0.37	0.96	398.56	3.75	<0.03	mg/kg	TM4/PM8
Pyrene #	0.15	2.27	0.31	<0.03	0.81	3.79	0.33	0.79	301.49	3.01	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.09	0.97	0.24	<0.06	0.25	1.88	0.20	0.38	152.22	1.52	<0.06	mg/kg	TM4/PM8
Chrysene #M	0.08	1.06	0.18	<0.02	0.38	2.10	0.20	0.37	128.96	1.63	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	0.13	1.76	0.32	<0.07	0.55	3.81	0.33	0.59	213.93	2.77	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.09	1.17	0.24	<0.04	0.33	2.57	0.23	0.37	136.20	1.91	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	0.05	0.77	0.13	<0.04	0.20	1.68	0.14	0.22	74.32	1.07	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	0.13	<0.04	<0.04	<0.04	0.31	<0.04	0.05	11.02	0.16	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.05	0.64	0.13	<0.04	0.21	1.75	0.15	0.21	72.29	1.01	<0.04	mg/kg	TM4/PM8
PAH 16 Total	0.9	16.3	2.3	<0.6	4.7	26.9	2.2	4.8	2001.1	19.8	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.09	1.27	0.23	<0.05	0.40	2.74	0.24	0.42	154.03	1.99	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.04	0.49	0.09	<0.02	0.15	1.07	0.09	0.17	59.90	0.78	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	91	112	102	112	114	107	107	106	115	118	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	-	-	-	-	<2	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	-	-	-	-	<3	ug/kg	TM15/PM10
Toluene #	<3	<3	21	<3	<3	<3	-	-	-	-	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	8	<3	-	-	-	-	<3	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	21-22	LOD	Units	Method No.
Sample ID	SO-WS19S1702140.7-0.8	SO-WS20S1702140.6-0.7	SO-WS21S1702140.7-0.8	SO-WS22S1802140.9-1.0	SO-WS23S1802140.3-0.4	SO-WS24S1802140.9-1.0	SO-WS25S1802140.6-0.7	SO-WS27S1802140.6-0.7	SO-WS28S1802140.6-0.7	SO-WS4S1802140.7-0.8			
Depth	0.7-0.8	0.6-0.7	0.7-0.8	0.9-1.0	0.3-0.4	0.9-1.0	0.6-0.7	0.6-0.7	0.6-0.7	0.7-0.8			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	17/02/2014	17/02/2014	17/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014			
p/m-Xylene #	<6	<6	<6	<6	42	<6	-	-	-	-	<6	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	23	<3	-	-	-	-	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	105	99	94	100	97	95	-	-	-	-	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	137	101	78	138	106	101	-	-	-	-	<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	<0.2	<0.2	<0.2	1.7	<0.2	-	-	-	-	<0.2	mg/kg	TM5/PM16
>C12-C16 #M	<4	<4	<4	<4	69	<4	-	-	-	-	<4	mg/kg	TM5/PM16
>C16-C21 #M	<7	<7	<7	<7	248	<7	-	-	-	-	<7	mg/kg	TM5/PM16
>C21-C35 #M	<7	<7	<7	<7	297	<7	-	-	-	-	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	<19	<19	<19	616	<19	-	-	-	-	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	<4	<4	<4	23	<4	-	-	-	-	<4	mg/kg	TM5/PM16
>EC16-EC21	<7	<7	<7	<7	123	28	-	-	-	-	<7	mg/kg	TM5/PM16
>EC21-EC35	<7	<7	<7	<7	200	141	-	-	-	-	<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	<19	<19	<19	346	169	-	-	-	-	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	962	169	-	-	-	-	<38	mg/kg	TM5/TM36/PM12/PM16
PCB 28 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 52 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 101 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 118 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 138 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 153 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 180 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	-	-	-	-	-	-	-	-	<35	ug/kg	TM17/PM8
Natural Moisture Content	20.4	NDP	NDP	28.6	8.0	30.8	26.2	9.7	10.1	21.1	<0.1	%	PM4/PM0
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	0.5	<0.3	0.5	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	0.1677	-	NDP	-	0.1545	-	0.0170	0.0757	-	-	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	-	0.0584	-	-	-	-	-	-	-	<0.0015	g/l	TM38/PM60
Fraction Organic Carbon	0.016	-	NDP	-	0.005	-	0.005	0.007	-	-	<0.001	None	TM21/PM24
pH #M	9.30	-	11.05	-	11.96	-	8.24	12.00	-	-	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	23-24	25-26	27-28	29-30	31-32	33-34	35-36	42	43	44	LOD	Units	Method No.
Sample ID	SO-WS30S1802140.6-0.7	SO-WS3S1902140.7-0.8	SO-WS29S1902140.7-0.8	SO-WS36S1902140.8-0.9	SO-WS33S1902140.5-0.6	SO-WS12S1902140.8-0.9	SO-WS1S1902140.7-0.8	SO-WS36S1902141.4-1.5	SO-WS4S1902141.6-1.7	SO-WS2S1902141.2-1.3			
Depth	0.6-0.7	0.7-0.8	0.7-0.8	0.8-0.9	0.5-0.6	0.8-0.9	0.7-0.8	1.4-1.5	1.6-1.7	1.2-1.3			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V	V	V			
Sample Date	18/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014			
Arsenic #M	NDP	22.1	NDP	8.6	7.9	37.5	13.2	-	-	-	<0.5	mg/kg	TM30/PM15
Arsenic	9.4	-	35.9	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Cadmium #M	NDP	0.5	NDP	0.1	<0.1	0.8	0.4	-	-	-	<0.1	mg/kg	TM30/PM15
Cadmium	0.6	-	0.2	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium #M	NDP	25.8	NDP	16.2	21.8	30.1	23.4	-	-	-	<0.5	mg/kg	TM30/PM15
Chromium	28.7	-	24.0	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper #M	NDP	96	NDP	29	14	118	43	-	-	-	<1	mg/kg	TM30/PM15
Copper	52	-	281	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead #M	NDP	290	NDP	35	24	286	254	-	-	-	<5	mg/kg	TM30/PM15
Lead	75	-	372	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury #M	NDP	2.3	NDP	0.1	0.1	1.8	15.7	-	-	-	<0.1	mg/kg	TM30/PM15
Mercury	8.1	-	3.3	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel #M	NDP	18.0	NDP	14.1	15.3	24.1	16.6	-	-	-	<0.7	mg/kg	TM30/PM15
Nickel	24.4	-	20.5	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium #M	NDP	<1	NDP	<1	<1	<1	<1	-	-	-	<1	mg/kg	TM30/PM15
Selenium	<1	-	<1	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc #M	NDP	125	NDP	41	39	299	158	-	-	-	<5	mg/kg	TM30/PM15
Zinc	277	-	190	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #M	2.30	0.05	0.05	<0.04	<0.04	<0.04	0.09	-	-	-	<0.04	mg/kg	TM4/PM8
Acenaphthylene	3.71	0.08	0.08	<0.03	<0.03	<0.03	0.11	-	-	-	<0.03	mg/kg	TM4/PM8
Acenaphthene #M	2.66	0.06	<0.05	<0.05	<0.05	<0.05	0.11	-	-	-	<0.05	mg/kg	TM4/PM8
Fluorene #M	2.39	<0.04	<0.04	<0.04	<0.04	<0.04	0.12	-	-	-	<0.04	mg/kg	TM4/PM8
Phenanthrene #M	28.52	0.47	0.20	0.11	0.06	<0.03	0.93	-	-	-	<0.03	mg/kg	TM4/PM8
Anthracene #	12.62	0.10	0.06	<0.04	<0.04	<0.04	0.32	-	-	-	<0.04	mg/kg	TM4/PM8
Fluoranthene #M	74.67	0.89	0.54	0.20	0.13	0.04	2.41	-	-	-	<0.03	mg/kg	TM4/PM8
Pyrene #	71.83	0.76	0.50	0.17	0.13	0.04	2.02	-	-	-	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	38.33	0.46	0.26	0.11	0.11	<0.06	1.09	-	-	-	<0.06	mg/kg	TM4/PM8
Chrysene #M	38.44	0.53	0.30	0.11	0.08	0.03	1.30	-	-	-	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	83.95	0.97	0.65	0.20	0.14	<0.07	2.20	-	-	-	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	58.55	0.70	0.43	0.14	0.12	<0.04	1.49	-	-	-	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	36.02	0.37	0.26	0.09	0.06	<0.04	0.84	-	-	-	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	4.81	0.06	0.05	<0.04	<0.04	<0.04	0.12	-	-	-	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	37.72	0.37	0.27	0.09	0.06	<0.04	0.91	-	-	-	<0.04	mg/kg	TM4/PM8
PAH 16 Total	496.5	5.9	3.7	1.2	0.9	<0.6	14.1	-	-	-	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	60.44	0.70	0.47	0.14	0.10	<0.05	1.58	-	-	-	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	23.51	0.27	0.18	0.06	0.04	<0.02	0.62	-	-	-	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	113	114	107	100	97	104	103	-	-	-	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	-	<2	<2	-	<2	-	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Benzene #	-	<3	<3	-	<3	-	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Toluene #	-	<3	<3	-	<3	-	<3	57	<3	7	<3	ug/kg	TM15/PM10
Ethylbenzene #	-	<3	<3	-	<3	-	<3	<3	<3	<3	<3	ug/kg	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	23-24	25-26	27-28	29-30	31-32	33-34	35-36	42	43	44	LOD	Units	Method No.
Sample ID	SO-WS30S1802140.6-0.7	SO-WS3S1902140.7-0.8	SO-WS29S1902140.7-0.8	SO-WS36S1902140.8-0.9	SO-WS33S1902140.5-0.6	SO-WS12S1902140.8-0.9	SO-WS1S1902140.7-0.8	SO-WS36S1902141.4-1.5	SO-WS4S1902141.6-1.7	SO-WS2S1902141.2-1.3			
Depth	0.6-0.7	0.7-0.8	0.7-0.8	0.8-0.9	0.5-0.6	0.8-0.9	0.7-0.8	1.4-1.5	1.6-1.7	1.2-1.3			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V	V	V			
Sample Date	18/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014			
p/m-Xylene #	-	<6	<6	-	<6	-	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
o-Xylene #	-	<3	<3	-	<3	-	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	106	107	-	103	-	105	102	104	109	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	98	108	-	122	-	99	116	133	110	<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #M	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #M	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #M	-	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>C12-C16 #M	-	<4	<4	-	<4	-	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>C16-C21 #M	-	<7	<7	-	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>C21-C35 #M	-	<7	<7	-	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	<19	<19	-	<19	-	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12	-	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>EC12-EC16	-	<4	<4	-	<4	-	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>EC16-EC21	-	<7	<7	-	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>EC21-EC35	-	11	<7	-	<7	-	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aromatics C5-35	-	<19	<19	-	<19	-	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	<38	<38	-	<38	-	<38	<38	<38	<38	<38	mg/kg	TM5/TM36/PM12/PM16
PCB 28 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 52 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 101 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 118 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 138 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 153 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 180 #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	-	-	-	-	-	-	-	-	<35	ug/kg	TM17/PM8
Natural Moisture Content	NDP	25.5	NDP	11.3	15.1	30.1	16.5	13.3	12.8	17.6	<0.1	%	PM4/PM0
Hexavalent Chromium	<0.3	<0.3	0.4	<0.3	<0.3	<0.3	<0.3	-	-	-	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	0.0810	NDP	-	0.1141	-	0.1878	-	-	-	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	-	0.1270	-	-	-	-	-	-	-	<0.0015	g/l	TM38/PM60
Fraction Organic Carbon	-	0.030	NDP	-	0.002	-	0.021	-	-	-	<0.001	None	TM21/PM24
pH #M	-	7.85	10.74	9.74	7.88	-	8.28	-	-	-	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	45-46	55-56											
Sample ID	SO-WS28S1802141.8-1.9	SO-WS17S1802141.3-1.4											
Depth	1.8-1.9	1.3-1.4											
COC No / misc													
Containers	V J	V J											
Sample Date	18/02/2014	18/02/2014											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	21/02/2014	21/02/2014											

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
Arsenic #M	-	-									<0.5	mg/kg	TM30/PM15
Arsenic	-	-									<0.5	mg/kg	TM30/PM62
Cadmium #M	-	-									<0.1	mg/kg	TM30/PM15
Cadmium	-	-									<0.1	mg/kg	TM30/PM62
Chromium #M	-	-									<0.5	mg/kg	TM30/PM15
Chromium	-	-									<0.5	mg/kg	TM30/PM62
Copper #M	-	-									<1	mg/kg	TM30/PM15
Copper	-	-									<1	mg/kg	TM30/PM62
Lead #M	-	-									<5	mg/kg	TM30/PM15
Lead	-	-									<5	mg/kg	TM30/PM62
Mercury #M	-	-									<0.1	mg/kg	TM30/PM15
Mercury	-	-									<0.1	mg/kg	TM30/PM62
Nickel #M	-	-									<0.7	mg/kg	TM30/PM15
Nickel	-	-									<0.7	mg/kg	TM30/PM62
Selenium #M	-	-									<1	mg/kg	TM30/PM15
Selenium	-	-									<1	mg/kg	TM30/PM62
Zinc #M	-	-									<5	mg/kg	TM30/PM15
Zinc	-	-									<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #M	-	-									<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-									<0.03	mg/kg	TM4/PM8
Acenaphthene #M	-	-									<0.05	mg/kg	TM4/PM8
Fluorene #M	-	-									<0.04	mg/kg	TM4/PM8
Phenanthrene #M	-	-									<0.03	mg/kg	TM4/PM8
Anthracene #	-	-									<0.04	mg/kg	TM4/PM8
Fluoranthene #M	-	-									<0.03	mg/kg	TM4/PM8
Pyrene #	-	-									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-									<0.06	mg/kg	TM4/PM8
Chrysene #M	-	-									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	-	-									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	-	-									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	-									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	-									<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	-									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-									<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	-									<2	ug/kg	TM15/PM10
Benzene #	<3	-									<3	ug/kg	TM15/PM10
Toluene #	15	-									<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	-									<3	ug/kg	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	45-46	55-56											
Sample ID	SO-WS28S1802141.8-1.9	SO-WS17S1802141.3-1.4											
Depth	1.8-1.9	1.3-1.4											
COC No / misc													
Containers	V J	V J											
Sample Date	18/02/2014	18/02/2014											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	21/02/2014	21/02/2014											

Please see attached notes for all abbreviations and acronyms

			LOD	Units	Method No.
p/m-Xylene #	<6	-	<6	ug/kg	TM15/PM10
o-Xylene #	<3	-	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	119	-	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	123	-	<0	%	TM15/PM10
TPH CWG					
Aliphatics					
>C5-C6 #M	<0.1	-	<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	-	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	-	<0.2	mg/kg	TM5/PM16
>C12-C16 #M	<4	-	<4	mg/kg	TM5/PM16
>C16-C21 #M	<7	-	<7	mg/kg	TM5/PM16
>C21-C35 #M	<7	-	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	-	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics					
>C5-EC7	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	-	<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	-	<4	mg/kg	TM5/PM16
>EC16-EC21	<7	-	<7	mg/kg	TM5/PM16
>EC21-EC35	<7	-	<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	-	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	-	<38	mg/kg	TM5/TM36/PM12/PM16
PCB 28 #	-	<500	<5	ug/kg	TM17/PM8
PCB 52 #	-	<500	<5	ug/kg	TM17/PM8
PCB 101 #	-	<500	<5	ug/kg	TM17/PM8
PCB 118 #	-	<500	<5	ug/kg	TM17/PM8
PCB 138 #	-	<500	<5	ug/kg	TM17/PM8
PCB 153 #	-	<500	<5	ug/kg	TM17/PM8
PCB 180 #	-	<500	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<3500	<35	ug/kg	TM17/PM8
Natural Moisture Content	25.6	26.3	<0.1	%	PM4/PM0
Hexavalent Chromium	-	-	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	-	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	-	-	<0.0015	g/l	TM38/PM60
Fraction Organic Carbon	-	-	<0.001	None	TM21/PM24
pH #M	-	-	<0.01	pH units	TM73/PM11

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

VOC Report : **Solid**

J E Sample No.	1-2	3-4	5-6	7-8	9-10	13-14	25-26	27-28	31-32	33-34	LOD	Units	Method No.
Sample ID	SO-WS19S1702140.7-0.8	SO-WS20S1702140.6-0.7	SO-WS21S1702140.7-0.8	SO-WS22S1802140.9-1.0	SO-WS23S1802140.3-0.4	SO-WS25S1802140.6-0.7	SO-WS3S1902140.7-0.8	SO-WS29S1902140.7-0.8	SO-WS33S1902140.5-0.6	SO-WS12S1902140.8-0.9			
Depth	0.7-0.8	0.6-0.7	0.7-0.8	0.9-1.0	0.3-0.4	0.6-0.7	0.7-0.8	0.7-0.8	0.5-0.6	0.8-0.9			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	17/02/2014	17/02/2014	17/02/2014	18/02/2014	18/02/2014	18/02/2014	19/02/2014	19/02/2014	19/02/2014	19/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014			
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Toluene #	<3	<3	21	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	10	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	8	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
p/m-Xylene #	<6	<6	<6	<6	42	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	23	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	10	<3	<3	6	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	19	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	64	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	15	<6	<6	240	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	22	<4	<4	10	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	43	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	105	99	94	100	97	108	106	107	103	112	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	137	101	78	138	106	125	98	108	122	98	<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

VOC Report : **Solid**

J E Sample No.	35-36	42	43	44	45-46							
Sample ID	SO-WS1S1902140.7-0.8	SO-WS36S1902141.4-1.5	SO-WS4S1902141.6-1.7	SO-WS2S1902141.2-1.3	SO-WS28S1802141.8-1.9							
Depth	0.7-0.8	1.4-1.5	1.6-1.7	1.2-1.3	1.8-1.9							
COC No / misc												
Containers	V J	V	V	V	V J							
Sample Date	19/02/2014	19/02/2014	19/02/2014	19/02/2014	18/02/2014							
Sample Type	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1							
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014							

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1						<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6						<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7	<7	<7						<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6						<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Toluene #	<3	57	<3	7	15						<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
p/m-Xylene #	<6	<6	<6	<6	<6						<6	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Bromoform	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2						<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3						<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5						<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6						<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7						<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4						<4	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7						<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	105	102	104	109	119						<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	99	116	133	110	123						<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.

Signed on behalf of Jones Environmental Laboratory:

Gemma Newsome
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Description	Asbestos Containing Material	Asbestos Results	Asbestos Level	Comments
14/3128	1	SO-WS19S1702140.7-0.8	0.7-0.8	2	27/02/14	Soil-Silt/Clay/Brick/Stone	None	NAD	NAD	
14/3128	1	SO-WS20S1702140.6-0.7	0.6-0.7	4	27/02/14	Soil-Silt/Clay/Brick/Stone	Free Fibres	Chrysotile	Quantifiable	
14/3128	1	SO-WS21S1702140.7-0.8	0.7-0.8	6	27/02/14	Soil-Silt/Clay/Brick/Stone	Free Fibres	Chrysotile	Quantifiable	
14/3128	1	SO-WS22S1802140.9-1.0	0.9-1.0	8	27/02/14	Soil-Clay/Brick/Stone	None	NAD	NAD	
14/3128	1	SO-WS23S1802140.3-0.4	0.3-0.4	10	27/02/14	Soil-Silt/Clay/Brick/Stone	None	NAD	NAD	
14/3128	1	SO-WS24S1802140.9-1.0	0.9-1.0	12	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS25S1802140.6-0.7	0.6-0.7	14	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS27S1802140.6-0.7	0.6-0.7	16	27/02/14	Soil-Silt/Brick/Stone	None	NAD	NAD	
14/3128	1	SO-WS28S1802140.6-0.7	0.6-0.7	18	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS4S1802140.7-0.8	0.7-0.8	22	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS30S1802140.6-0.7	0.6-0.7	24	28/02/14	Soil/Stone/Silt	Free Fibres	Amosite, Chrysotile	Quantifiable	
14/3128	1	SO-WS3S1902140.7-0.8	0.7-0.8	26	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS29S1902140.7-0.8	0.7-0.8	28	28/02/14	Soil/Stone	Free Fibres	Chrysotile	Quantifiable	
14/3128	1	SO-WS36S1902140.8-0.9	0.8-0.9	30	28/02/14	Soil/Stone	None	NAD	NAD	

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Description	Asbestos Containing Material	Asbestos Results	Asbestos Level	Comments
14/3128	1	SO-WS33S1902140.5-0.6	0.5-0.6	32	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS12S1902140.8-0.9	0.8-0.9	34	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS1S1902140.7-0.8	0.7-0.8	36	28/02/14	Soil/Stone	None	NAD	NAD	
14/3128	1	SO-WS17S1802141.3-1.4	1.3-1.4	56	28/02/14	Soil/Stone	None	NAD	NAD	

Client Name: Geosyntec Consulting **Matrix : Solid**
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
14/3128	1	SO-WS20S1702140.6-0.7	0.6-0.7	3-4	Asbestos detected in sample
14/3128	1	SO-WS21S1702140.7-0.8	0.7-0.8	5-6	Asbestos detected in sample
14/3128	1	SO-WS30S1802140.6-0.7	0.6-0.7	23-24	Asbestos detected in sample
14/3128	1	SO-WS29S1902140.7-0.8	0.7-0.8	27-28	Asbestos detected in sample

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/3128						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/3128

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 14/3128

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.			AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation			AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM16	Aliphatic/Aromatic fractionation	Yes	Yes	AR	Yes
TM5/TM36	TPH CWG by GC-FID	PM12/PM16	CWG GC-FID			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes		AR	Yes
TM17	PCB 7 Congeners and WHO 12 PCBs by GC-MS	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes

JE Job No: 14/3128

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM21	TOC and TC by Combustion	PM24	Eltra preparation			AD	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM15	In-house method based on USEPA 3010A. Acid digestion of dried and crushed solid samples using Aqua Regia reflux.	Yes	Yes	AD	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM62	Aqua Regia extraction (Soils) (as received sample)			AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes	Yes	AR	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.	Yes	Yes	AD	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.			AR	Yes
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM60	1:2 soil to water extraction (as received sample)	Yes	Yes	AR	Yes
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres	Yes		AR	

JE Job No: 14/3128

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM73	pH in by Metrohm	PM11	1:2.5 soil/water extraction	Yes	Yes	AR	No

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention :	Nick Roe
Date :	13th March, 2014
Your reference :	GCU0124024-2B
Our reference :	Test Report 14/2966 Batch 1 Schedule B
Location :	Hayes
Date samples received :	18th February, 2014
Status :	Final report
Issue :	1

Fourteen samples were received for analysis on 18th February, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe
JE Job No.: 14/2966

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	27-28										Please see attached notes for all abbreviations and acronyms		
Sample ID	SO-WS18												
Depth	0.4-0.5												
COC No / misc													
Containers	V J												
Sample Date	14/02/2014												
Sample Type	Soil												
Batch Number	1										LOD	Units	Method No.
Date of Receipt	18/02/2014												
Asbestos PCOM Quantification (Fibres)	0.002										<0.001	mass %	TM65/PM42

Client Name: Geosyntec Consulting
Reference: GCU0124024-2B
Location: Hayes
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/2966						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/2966

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 14/2966

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	Yes

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention :	Nick Roe
Date :	13th March, 2014
Your reference :	GCU0124024
Our reference :	Test Report 14/3128 Batch 1 Schedule C
Location :	Hayes 2B
Date samples received :	21st February, 2014
Status :	Final report
Issue :	1

Thirty two samples were received for analysis on 21st February, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	3-4	5-6	23-24	27-28							LOD	Units	Method No.
Sample ID	SO-WS20S1702140.6-0.7	SO-WS21S1702140.7-0.8	SO-WS30S1802140.6-0.7	SO-WS29S1902140.7-0.8									
Depth	0.6-0.7	0.7-0.8	0.6-0.7	0.7-0.8									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	17/02/2014	17/02/2014	18/02/2014	19/02/2014									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014									
Asbestos PCOM Quantification (Fibres)	0.001	<0.001	0.001	<0.001							<0.001	mass %	TM65/PM42

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/3128						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/3128

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 14/3128

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	Yes

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention :	Nick Roe
Date :	3rd June, 2014
Your reference :	GCU0124024
Our reference :	Test Report 14/3128 Batch 1 Schedule D
Location :	Hayes 2B
Date samples received :	21st February, 2014
Status :	Final report
Issue :	1

Thirty two samples were received for analysis on 21st February, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Lee-Boden BSc
Project Manager

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	11-12	13-14	17-18	21-22	23-24	25-26	27-28	LOD/LOR	Units	Method No.
Sample ID	SO-WS19S1702140.7-0.8	SO-WS20S1702140.6-0.7	SO-WS21S1702140.7-0.8	SO-WS24S1802140.9-1.0	SO-WS25S1802140.6-0.7	SO-WS28S1802140.6-0.7	SO-WS4S1802140.7-0.8	SO-WS30S1802140.6-0.7	SO-WS3S1902140.7-0.8	SO-WS29S1902140.7-0.8			
Depth	0.7-0.8	0.6-0.7	0.7-0.8	0.9-1.0	0.6-0.7	0.6-0.7	0.7-0.8	0.6-0.7	0.7-0.8	0.7-0.8			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	17/02/2014	17/02/2014	17/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	18/02/2014	19/02/2014	19/02/2014			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014			
Mercury CVAF	21.6	-	-	2.1	<0.5	<0.5	1.0	-	2.6	-	<0.5	mg/kg	TM61/PM15
Mercury CVAF	-	4.8	9.5	-	-	-	-	9.0	-	2.9	<0.5	mg/kg	TM61/PM62
Elemental Mercury	<0.02	2.86	30.02	<0.02	<0.02	14.48	35.01	1.13	8.37	0.45	<0.02	ug/kg	TM96/PM53
Natural Moisture Content	-	-	-	-	-	-	-	-	-	-	<0.1	%	PM4/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3128

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	29-30	31-32	33-34	35-36	55-56	59-60					LOD/LOR	Units	Method No.
Sample ID	SO-WS36S1902140.8-0.9	SO-WS33S1902140.5-0.6	SO-WS12S1902140.8-0.9	SO-WS1S1902140.7-0.8	SO-WS17S1802141.3-1.4	SO-WS3S1902141.0-1.1							
Depth	0.8-0.9	0.5-0.6	0.8-0.9	0.7-0.8	1.3-1.4	1.0-1.1							
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J							
Sample Date	19/02/2014	19/02/2014	19/02/2014	19/02/2014	18/02/2014	19/02/2014							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014	21/02/2014							
Mercury CVAF	<0.5	<0.5	3.1	2.7	0.8	<0.5					<0.5	mg/kg	TM61/PM15
Mercury CVAF	-	-	-	-	-	-					<0.5	mg/kg	TM61/PM62
Elemental Mercury	21.04	0.87	46.91	0.32	0.42	35.54					<0.02	ug/kg	TM96/PM53
Natural Moisture Content	-	-	-	-	-	19.5					<0.1	%	PM4/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Hayes 2B
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/3128						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/3128

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
OC	Outside Calibration Range

JE Job No: 14/3128

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM61	PS Analytical's (instrument manufacturer) method based on USEPA 1631. Determination of Mercury by Cold Vapour Atomic Fluorescence. Accredited to ISO 17025. All accreditation is matrix specific.	PM15	In-house method based on USEPA 3010A. Acid digestion of dried and crushed solid samples using Aqua Regia reflux.			AD	Yes
TM61	PS Analytical's (instrument manufacturer) method based on USEPA 1631. Determination of Mercury by Cold Vapour Atomic Fluorescence. Accredited to ISO 17025. All accreditation is matrix specific.	PM62	Aqua Regia extraction (Soils) (as received sample)			AR	Yes
TM96	Elemental Mercury	PM53	Preparation of sample for Elemental Mercury			AR	Yes

Geosyntec consultants

APPENDIX C

Appendix D: Hydraulic Conductivity Estimates (Bower and Rice method, 1976)

	Hydraulic Conductivity (K) estimates - 5 tests				
BH3	14.6	19.8	12.5	22.7	22.5
BH5	14.3	2.26	17.9	24.7	4.62
BH7	28.8	33.1	30.9	21.4	27.9
BH8	3.08	16.1	3.62	15.5	16.1

	Rising head test (RHT) result
	Falling head test (FHT) result

FHT average K (m/day)	FHT K Range (m/day)			Saturated S+G thickness (m)
18.4	22.7	12.5	**BH3**	1.9
19.0	24.7	14.3	**BH5**	1.6
28.4	33.1	21.4	**BH7**	4.05
15.9	16.1	15.5	**BH8**	2.1

Geosyntec consultants

APPENDIX D

Jones Environmental Laboratory

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention :	Nick Roe
Date :	20th December, 2013
Your reference :	GCU0124024
Our reference :	Test Report 13/11428 Batch 1
Location :	Nestle Hayes
Date samples received :	6th December, 2013
Status :	Final report
Issue :	1

Eleven samples were received for analysis on 6th December, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11428

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	46-47												
Sample ID	BH2 S0212131.7-1.8												
Depth	1.7-1.8												
COC No / misc													
Containers	V J												
Sample Date	04/12/2013												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	06/12/2013												

Please see attached notes for all abbreviations and acronyms

		LOD	Units	Method No.
Arsenic #M	14.4	<0.5	mg/kg	TM30/PM15
Cadmium #M	<0.1	<0.1	mg/kg	TM30/PM15
Chromium #M	133.6	<0.5	mg/kg	TM30/PM15
Copper #M	<1	<1	mg/kg	TM30/PM15
Lead #M	6	<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #M	23.3	<0.7	mg/kg	TM30/PM15
Selenium #M	<1	<1	mg/kg	TM30/PM15
Zinc #M	27	<5	mg/kg	TM30/PM15
PAH MS				
Naphthalene #M	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #M	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #M	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #M	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	114	<0	%	TM4/PM8
EPH (C8-C40) #M	<30	<30	mg/kg	TM5/PM8
Natural Moisture Content	8.1	<0.1	%	PM4/PM0
Hexavalent Chromium	<0.3	<0.3	mg/kg	TM38/PM20
Fraction Organic Carbon	<0.001	<0.001	None	TM21/PM24
pH #M	7.87	<0.01	pH units	TM73/PM11
Sample Type	Other		None	PM13/PM0
Sample Colour	Medium Grey		None	PM13/PM0
Other Items	clay, mostly stones		None	PM13/PM0

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11428

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	48-52	LOD	Units	Method No.
Sample ID	GW - BH1 GW041213	GW - BH2 GW041213	GW - BH3 GW031213	GW - BH5 GW031213	GW - BH6 GW031213	GW - BH7 GW041213	GW - BH8 GW031213	GW - BH9 GW031213	GW - ABS GW041213	GW - DUPA - D4 R13			
Depth													
COC No / misc													
Containers	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G			
Sample Date	04/12/2013	04/12/2013	03/12/2013	03/12/2013	03/12/2013	04/12/2013	03/12/2013	03/12/2013	04/12/2013	04/12/2013			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013			
Dissolved Arsenic #	15.1	<2.5	<2.5	4.1	<2.5	<2.5	<2.5	3.4	<2.5	15.6	<2.5	ug/l	TM30/PM14
Dissolved Boron	189	135	167	264	130	123	121	267	559	178	<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	3.0	<1.5	<1.5	<1.5	<1.5	<1.5	2.0	1.6	<1.5	3.3	<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM30/PM14
Dissolved Mercury #	3	<1	<1	<1	<1	<1	<1	<1	<1	3	<1	ug/l	TM30/PM14
Dissolved Nickel #	44	<2	17	4	2	3	17	4	<2	43	<2	ug/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	ug/l	TM30/PM14
Dissolved Zinc #	<3	<3	<3	<3	<3	<3	<3	<3	6	<3	<3	ug/l	TM30/PM14
PAH MS													
Naphthalene #	0.960	21.380	<0.014	<0.014	0.120	0.070	0.040	<0.014	<0.014	0.470	<0.014	ug/l	TM4/PM30
Acenaphthylene #	0.040	0.300	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.030	<0.013	ug/l	TM4/PM30
Acenaphthene #	0.930	2.790	<0.013	0.020	0.040	0.020	0.110	<0.013	<0.013	0.720	<0.013	ug/l	TM4/PM30
Fluorene #	0.370	1.890	<0.014	<0.014	0.030	0.020	0.020	<0.014	<0.014	0.300	<0.014	ug/l	TM4/PM30
Phenanthrene #	0.100	2.780	0.020	0.030	0.050	0.050	0.020	<0.011	<0.011	0.090	<0.011	ug/l	TM4/PM30
Anthracene #	0.050	0.370	<0.013	<0.013	0.020	<0.013	<0.013	<0.013	<0.013	0.040	<0.013	ug/l	TM4/PM30
Fluoranthene #	0.040	0.310	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	0.030	<0.012	ug/l	TM4/PM30
Pyrene #	0.020	0.170	<0.013	<0.013	<0.013	<0.013	<0.013	0.040	<0.013	0.020	<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.015	0.020	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
PAH 16 Total #	2.510	30.010	<0.195	<0.195	0.260	<0.195	<0.195	<0.195	<0.195	1.700	<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	88	75	86	83	95	73	99	80	89	70	<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Toluene #	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Ethylbenzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
o-Xylene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	120	119	118	118	119	117	117	116	118	120	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	121	122	122	122	121	121	121	122	122	123	<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11428

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	48-52	LOD	Units	Method No.
Sample ID	GW - BH1 GW041213	GW - BH2 GW041213	GW - BH3 GW031213	GW - BH5 GW031213	GW - BH6 GW031213	GW - BH7 GW041213	GW - BH8 GW031213	GW - BH9 GW031213	GW - ABS GW041213	GW - DUPA - D4 R13			
Depth													
COC No / misc													
Containers	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G			
Sample Date	04/12/2013	04/12/2013	03/12/2013	03/12/2013	03/12/2013	04/12/2013	03/12/2013	03/12/2013	04/12/2013	04/12/2013			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013			
TPH CWG													
Aliphatics													
>C5-C6 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>C6-C8 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>C8-C10 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/TM36/PM30
Aromatics													
>C5-EC7 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>EC7-EC8 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>EC8-EC10 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM5/PM30
>EC12-EC16 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>EC16-EC21 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
Total aromatics C5-35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/TM36/PM30
Hexavalent Chromium	<0.03	0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/l	TM38/PM0

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11428

VOC Report : **Solid**

J E Sample No.	46-47												
Sample ID	BH2 S0212131.7-1.8												
Depth	1.7-1.8												
COC No / misc													
Containers	V J												
Sample Date	04/12/2013												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	06/12/2013												

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2										<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2										<2	ug/kg	TM15/PM10
Chloromethane #	<3										<3	ug/kg	TM15/PM10
Vinyl Chloride	<2										<2	ug/kg	TM15/PM10
Bromomethane	<1										<1	ug/kg	TM15/PM10
Chloroethane #	<2										<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2										<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6										<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7										<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3										<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4										<4	ug/kg	TM15/PM10
Bromochloromethane #	<3										<3	ug/kg	TM15/PM10
Chloroform #	<3										<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3										<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4										<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4										<4	ug/kg	TM15/PM10
Benzene #	<3										<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3										<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6										<6	ug/kg	TM15/PM10
Dibromomethane #	<3										<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3										<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4										<4	ug/kg	TM15/PM10
Toluene #	<3										<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3										<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3										<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3										<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3										<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3										<3	ug/kg	TM15/PM10
Chlorobenzene #	<3										<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3										<3	ug/kg	TM15/PM10
Ethylbenzene #	<3										<3	ug/kg	TM15/PM10
p/m-Xylene #	<6										<6	ug/kg	TM15/PM10
o-Xylene #	<3										<3	ug/kg	TM15/PM10
Styrene	<3										<3	ug/kg	TM15/PM10
Bromoform	<3										<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3										<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3										<3	ug/kg	TM15/PM10
Bromobenzene	<2										<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4										<4	ug/kg	TM15/PM10
Propylbenzene #	<4										<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3										<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5										<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6										<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4										<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4										<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4										<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4										<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7										<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4										<4	ug/kg	TM15/PM10
Naphthalene	<27										<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7										<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	112										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	143										<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe
JE Job No.: 13/11428

VOC Report : **Liquid**

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	48-52			
Sample ID	GW - BH1 GW041213	GW - BH2 GW041213	GW - BH3 GW031213	GW - BH5 GW031213	GW - BH6 GW031213	GW - BH7 GW041213	GW - BH8 GW031213	GW - BH9 GW031213	GW - ABS GW041213	GW - DUPA - D4 R13			
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G	V HN G			
Sample Date	04/12/2013	04/12/2013	03/12/2013	03/12/2013	03/12/2013	04/12/2013	03/12/2013	03/12/2013	04/12/2013	04/12/2013			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	06/12/2013	LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Vinyl Chloride	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Toluene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Ethylbenzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
o-Xylene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	120	119	118	118	119	117	117	116	118	120	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	121	122	122	122	121	121	121	122	122	123	<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle Hayes
Contact: Nick Roe

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.

Signed on behalf of Jones Environmental Laboratory:

Gemma Newsome
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Description	Asbestos Containing Material	Asbestos Results	Asbestos Level	Comments
13/11428	1	BH2 S0212131.7-1.8	1.7-1.8	47	17/12/13	Soil-Sand/Brick/Stone	None	NAD	NAD	

Client Name: Geosyntec Consulting

Reference: GCU0124024

Location: Nestle Hayes

Contact: Nick Roe

Matrix : Liquid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/11428

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 13/11428

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.			AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes		AR	Yes
TM4	16 PAH by GC-MS, modified USEPA 8270	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM8	In-house method based on USEPA 3510. ISO 17025 accredited extraction method for organic extraction from solid samples using an end over end agitator.	Yes	Yes	AR	Yes
TM5/TM36	TPH CWG by GC-FID	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
PM13	Soil Typing for MCERTS	PM0	No preparation is required.			AR	

JE Job No: 13/11428

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific			AR	Yes
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes		AR	Yes
TM21	TOC and TC by Combustion	PM24	Eltra preparation			AD	Yes
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM15	In-house method based on USEPA 3010A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030S. ISO 17025 and MCERTS accredited extraction method. All accreditation is matrix specific	Yes	Yes	AD	Yes
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM0	No preparation is required.				

JE Job No: 13/11428

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM20	in-house method based on USEPA 1311 (TCLP). Solid samples are extracted with two parts de-ionised water to one part solid material for analysis of the extract for various parameters.			AR	Yes
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres			AR	
TM65	Asbestos Bulk Identification	PM42	Screening of soils for fibres	Yes		AR	
TM73	pH in by Metrohm	PM11	1:2.5 soil/water extraction	Yes	Yes	AR	No

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

4225

Attention :	Nick Roe
Date :	13th March, 2014
Your reference :	GW0124 024
Our reference :	Test Report 14/3449 Batch 1
Location :	Hayes 2B
Date samples received :	1st March, 2014
Status :	Final report
Issue :	1

Twelve samples were received for analysis on 1st March, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GW0124 024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3449

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	LOD	Units	Method No.
Sample ID	WG-WS17-270214	WG-WS22-270214	WG-WS28-280214	WG-WS36-270214	WG-BH1-270214	WG-BH2-270214	WG-BH4-270214	WG-BH5-270214	WG-BH8-270214	WG-BH9-270214			
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G			
Sample Date	27/02/2014	27/02/2014	28/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014			
Dissolved Arsenic #	1.4	8.7	<0.9	<0.9	21.0	<0.9	<0.9	<0.9	8.7	<0.9	<0.9	ug/l	TM30/PM14
Dissolved Barium #	10.8	34.9	173.1	104.7	39.6	26.5	89.9	86.1	3.2	124.6	<1.8	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM30/PM14
Dissolved Boron	133	174	217	115	126	94	373	252	123	200	<2	ug/l	TM30/PM14
Dissolved Cadmium #	<0.03	<0.03	4.76	<0.03	<0.03	0.06	0.82	1.29	<0.03	0.12	<0.03	ug/l	TM30/PM14
Total Dissolved Chromium #	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ug/l	TM30/PM14
Dissolved Copper #	<3	5	<3	3	<3	<3	<3	<3	7	<3	<3	ug/l	TM30/PM14
Dissolved Lead #	3.0	3.7	7.2	31.9	2.8	1.2	2.7	3.8	4.0	3.2	<0.4	ug/l	TM30/PM14
Dissolved Mercury #	<0.5	<0.5	<0.5	<0.5	6.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM30/PM14
Dissolved Nickel #	<0.2	0.7	0.9	14.6	17.6	1.4	2.4	4.6	3.1	3.0	<0.2	ug/l	TM30/PM14
Dissolved Potassium #	-	-	-	-	-	-	-	-	6.3	-	<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<1.2	14.1	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	ug/l	TM30/PM14
Dissolved Sodium #	-	-	-	-	-	-	-	-	279.7	-	<0.1	mg/l	TM30/PM14
Dissolved Vanadium #	16.2	42.2	3.0	34.8	30.6	10.5	12.4	11.7	18.2	10.8	<0.6	ug/l	TM30/PM14
Dissolved Zinc #	<1.5	2.2	9.0	26.8	2.2	2.2	3.6	4.3	1.7	2.1	<1.5	ug/l	TM30/PM14
Mercury Dissolved by CVAF #	<0.01	0.21	<0.01	0.03	40.64	0.20	<0.01	<0.01	0.87	0.01	<0.01	ug/l	TM61/PM38
PAH MS													
Naphthalene #	<0.014	<0.014	0.040	0.070	3.950	0.070	0.030	0.020	0.360	<0.014	<0.014	ug/l	TM4/PM30
Acenaphthylene #	<0.013	<0.013	<0.013	<0.013	0.060	0.020	<0.013	<0.013	<0.013	0.090	<0.013	ug/l	TM4/PM30
Acenaphthene #	<0.013	0.020	0.310	0.030	1.810	0.460	0.150	<0.013	0.190	0.330	<0.013	ug/l	TM4/PM30
Fluorene #	<0.014	<0.014	0.220	0.030	0.950	0.290	0.070	<0.014	0.050	0.770	<0.014	ug/l	TM4/PM30
Phenanthrene #	0.020	0.020	0.650	0.040	0.350	0.020	0.170	0.020	0.040	0.140	<0.011	ug/l	TM4/PM30
Anthracene #	<0.013	<0.013	0.150	<0.013	0.060	0.030	0.050	<0.013	<0.013	0.020	<0.013	ug/l	TM4/PM30
Fluoranthene #	<0.012	<0.012	0.180	0.020	0.040	0.380	0.140	<0.012	0.020	0.020	<0.012	ug/l	TM4/PM30
Pyrene #	<0.013	0.020	0.120	0.020	0.020	0.270	0.080	<0.013	0.020	0.050	<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.015	<0.015	0.020	<0.015	<0.015	0.020	<0.015	<0.015	<0.015	<0.015	<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	<0.011	<0.011	<0.011	<0.011	0.020	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.018	0.020	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
PAH 16 Total #	<0.195	<0.195	1.690	0.210	7.240	1.580	0.690	<0.195	0.680	1.420	<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	99	90	90	94	82	98	99	107	97	96	<0	%	TM4/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GW0124 024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3449

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	LOD	Units	Method No.
Sample ID	WG-WS17-270214	WG-WS22-270214	WG-WS28-280214	WG-WS36-270214	WG-BH1-270214	WG-BH2-270214	WG-BH4-270214	WG-BH5-270214	WG-BH8-270214	WG-BH9-270214			
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G			
Sample Date	27/02/2014	27/02/2014	28/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014			
TPH CWG													
Aliphatics													
>C5-C6 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>C6-C8 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>C8-C10 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/TM36/PM30
Aromatics													
>C5-EC7 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>EC7-EC8 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>EC8-EC10 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM5/PM30
>EC12-EC16 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>EC16-EC21 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
Total aromatics C5-35 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5/TM36/PM30
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM36/PM12
Sulphate #	45.85	108.62	93.07	<0.05	49.25	59.10	402.53	20.91	96.53	59.49	<0.05	mg/l	TM38/PM0
Hexavalent Chromium	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM38/PM0
Total Dissolved Chromium III	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	NONE/NONE
Total Alkalinity as CaCO3 #	202	162	360	630	216	104	590	582	132	234	<1	mg/l	TM75/PM0

Client Name: Geosyntec Consulting
Reference: GW0124 024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3449

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	51-55	56-60										
Sample ID	WG-DUP-270214	WG-ABS-280214										
Depth												
COC No / misc												
Containers	V HN P G	V HN P G										
Sample Date	27/02/2014	28/02/2014										
Sample Type	Ground Water	Ground Water										
Batch Number	1	1										
Date of Receipt	01/03/2014	01/03/2014										
											LOD	Units	Method No.
Dissolved Arsenic #	<0.9	<0.9									<0.9	ug/l	TM30/PM14
Dissolved Barium #	23.6	22.0									<1.8	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5									<0.5	ug/l	TM30/PM14
Dissolved Boron	87	597									<2	ug/l	TM30/PM14
Dissolved Cadmium #	<0.03	<0.03									<0.03	ug/l	TM30/PM14
Total Dissolved Chromium #	<0.2	<0.2									<0.2	ug/l	TM30/PM14
Dissolved Copper #	<3	<3									<3	ug/l	TM30/PM14
Dissolved Lead #	1.4	3.5									<0.4	ug/l	TM30/PM14
Dissolved Mercury #	<0.5	<0.5									<0.5	ug/l	TM30/PM14
Dissolved Nickel #	0.5	<0.2									<0.2	ug/l	TM30/PM14
Dissolved Potassium #	-	-									<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<1.2	<1.2									<1.2	ug/l	TM30/PM14
Dissolved Sodium #	-	-									<0.1	mg/l	TM30/PM14
Dissolved Vanadium #	11.0	10.4									<0.6	ug/l	TM30/PM14
Dissolved Zinc #	<1.5	13.3									<1.5	ug/l	TM30/PM14
Mercury Dissolved by CVAF #	0.19	<0.01									<0.01	ug/l	TM61/PM38
PAH MS													
Naphthalene #	<0.014	<0.014									<0.014	ug/l	TM4/PM30
Acenaphthylene #	<0.013	<0.013									<0.013	ug/l	TM4/PM30
Acenaphthene #	0.050	<0.013									<0.013	ug/l	TM4/PM30
Fluorene #	<0.014	<0.014									<0.014	ug/l	TM4/PM30
Phenanthrene #	<0.011	<0.011									<0.011	ug/l	TM4/PM30
Anthracene #	<0.013	<0.013									<0.013	ug/l	TM4/PM30
Fluoranthene #	0.120	<0.012									<0.012	ug/l	TM4/PM30
Pyrene #	0.240	<0.013									<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.015	<0.015									<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	<0.011									<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.018	<0.018									<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.016	<0.016									<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.011	<0.011									<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01									<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.011	<0.011									<0.011	ug/l	TM4/PM30
PAH 16 Total #	0.410	<0.195									<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01									<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01									<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	93	92									<0	%	TM4/PM30

Client Name: Geosyntec Consulting
Reference: GW0124 024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3449

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	51-55	56-60									LOD	Units	Method No.
Sample ID	WG-DUP-270214	WG-ABS-280214											
Depth													
COC No / misc													
Containers	V HN P G	V HN P G											
Sample Date	27/02/2014	28/02/2014											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	01/03/2014	01/03/2014											
TPH CWG													
Aliphatics													
>C5-C6 #	<5	<5									<5	ug/l	TM36/PM12
>C6-C8 #	<5	<5									<5	ug/l	TM36/PM12
>C8-C10 #	<5	<5									<5	ug/l	TM36/PM12
>C10-C12 #	<5	<5									<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10									<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10									<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10									<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	<10	<10									<10	ug/l	TM5/TM36/PM30
Aromatics													
>C5-EC7 #	<5	<5									<5	ug/l	TM36/PM12
>EC7-EC8 #	<5	<5									<5	ug/l	TM36/PM12
>EC8-EC10 #	<5	<5									<5	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5									<5	ug/l	TM5/PM30
>EC12-EC16 #	<10	<10									<10	ug/l	TM5/PM30
>EC16-EC21 #	<10	<10									<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10									<10	ug/l	TM5/PM30
Total aromatics C5-35 #	<10	<10									<10	ug/l	TM5/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10									<10	ug/l	TM5/TM36/PM30
MTBE #	<5	<5									<5	ug/l	TM36/PM12
Benzene #	<5	<5									<5	ug/l	TM36/PM12
Toluene #	<5	<5									<5	ug/l	TM36/PM12
Ethylbenzene #	<5	<5									<5	ug/l	TM36/PM12
m/p-Xylene #	<5	<5									<5	ug/l	TM36/PM12
o-Xylene #	<5	<5									<5	ug/l	TM36/PM12
Sulphate #	60.06	112.10									<0.05	mg/l	TM38/PM0
Hexavalent Chromium	<2	<2									<2	ug/l	TM38/PM0
Total Dissolved Chromium III	<2	<2									<2	ug/l	NONE/NONE
Total Alkalinity as CaCO3 #	100	294									<1	mg/l	TM75/PM0

Client Name: Geosyntec Consulting
Reference: GW0124 024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3449

VOC Report : **Liquid**

J E Sample No.	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50			
Sample ID	WG-WS17-270214	WG-WS22-270214	WG-WS28-280214	WG-WS36-270214	WG-BH1-270214	WG-BH2-270214	WG-BH4-270214	WG-BH5-270214	WG-BH8-270214	WG-BH9-270214			
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G			
Sample Date	27/02/2014	27/02/2014	28/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014	27/02/2014			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	01/03/2014	LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Vinyl Chloride	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Toluene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Ethylbenzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
o-Xylene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	96	95	93	102	99	99	99	102	91	89	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	111	107	106	112	112	113	111	113	102	101	<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GW0124 024
Location: Hayes 2B
Contact: Nick Roe
JE Job No.: 14/3449

VOC Report : **Liquid**

J E Sample No.	51-55	56-60									LOD	Units	Method No.
Sample ID	WG-DUP-270214	WG-ABS-280214											
Depth													
COC No / misc													
Containers	V HN P G	V HN P G											
Sample Date	27/02/2014	28/02/2014											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	01/03/2014	01/03/2014											
VOC MS													
Dichlorodifluoromethane	<2	<2									<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1									<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3									<3	ug/l	TM15/PM10
Vinyl Chloride	<0.1	<0.1									<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1									<1	ug/l	TM15/PM10
Chloroethane #	<3	<3									<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3									<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3									<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3									<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3									<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3									<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3									<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1									<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2									<2	ug/l	TM15/PM10
Chloroform #	<2	<2									<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2									<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3									<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2									<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2									<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5									<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2									<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3									<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2									<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2									<2	ug/l	TM15/PM10
Toluene #	<0.5	<0.5									<0.5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2									<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2									<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3									<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2									<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2									<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2									<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2									<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2									<2	ug/l	TM15/PM10
Ethylbenzene #	<0.5	<0.5									<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	<1									<1	ug/l	TM15/PM10
o-Xylene #	<0.5	<0.5									<0.5	ug/l	TM15/PM10
Styrene	<2	<2									<2	ug/l	TM15/PM10
Bromoform #	<2	<2									<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4									<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2									<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3									<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3									<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3									<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3									<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3									<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3									<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3									<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2									<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3									<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3									<3	ug/l	TM15/PM10
Naphthalene	<2	<2									<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3									<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	89	87									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	98	99									<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GW0124 024
Location: Hayes 2B
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/3449						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/3449

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No: 14/3449

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM4	16 PAH by GC-MS, modified USEPA 8270	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM5/TM36	TPH CWG by GC-FID	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM36	In-House method based on USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-12 by headspace GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS accredited (carbon banding only) on soils. All accreditation is matrix specific.	PM12	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM0	No preparation is required.				

JE Job No: 14/3449

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM0	No preparation is required.	Yes			
TM61	PS Analytical's (instrument manufacturer) method based on USEPA 1631. Determination of Mercury by Cold Vapour Atomic Fluorescence. Accredited to ISO 17025. All accreditation is matrix specific.	PM38	In-house method based on USEPA 1631. Samples are brominated to reduce all mercury compounds to Mercury (II) which is analysed as per TM016. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM75	Alkalinity by Metrohm	PM0	No preparation is required.	Yes			
NONE	No Method Code	NONE	No Method Code				

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

4225

Attention :	Nick Roe
Date :	5th June, 2014
Your reference :	GCU0124024
Our reference :	Test Report 14/6324 Batch 1
Location :	Nestle, Hays
Date samples received :	30th May, 2014
Status :	Final report
Issue :	1

Fifteen samples were received for analysis on 30th May, 2014. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Lee-Boden BSc
Project Manager

Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle, Hays
Contact: Nick Roe
JE Job No.: 14/6324

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH1-280514GW	BH2-280514GW	BH3-280514GW	BH4-280514GW	BH5-280514GW	BH6-280514GW	BH7-280514GW	BH8-280514GW	BH9-270514GW	BH11-280514GW			
Depth													
COC No / misc													
Containers	HN P G	HN P G	HN P G	HN P G	HN P G	HN P G	HN P G	HN P G	HN P G	HN P G			
Sample Date	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014	27/05/2014	28/05/2014			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	30/05/2014	30/05/2014	30/05/2014	30/05/2014	30/05/2014	30/05/2014	30/05/2014	30/05/2014	30/05/2014	30/05/2014			
Dissolved Arsenic #	28.3	1.7	<0.9	<0.9	<0.9	<0.9	<0.9	5.9	<0.9	31.1	<0.9	ug/l	TM30/PM14
Dissolved Barium #	16.8	34.0	85.3	130.9	86.1	78.7	42.8	9.5	135.2	17.1	<1.8	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM30/PM14
Dissolved Boron	109	111	183	436	250	138	481	150	246	110	<2	ug/l	TM30/PM14
Dissolved Cadmium #	0.14	0.23	0.17	1.66	1.58	<0.03	0.04	<0.03	0.26	0.07	<0.03	ug/l	TM30/PM14
Total Dissolved Chromium #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	2.7	<0.2	<0.2	0.6	<0.2	ug/l	TM30/PM14
Dissolved Copper #	<3	<3	3	<3	<3	4	9	<3	<3	<3	<3	ug/l	TM30/PM14
Dissolved Lead #	2.0	0.7	0.9	2.7	1.9	0.7	1.1	1.0	1.6	2.1	<0.4	ug/l	TM30/PM14
Dissolved Nickel #	6.1	0.9	14.1	2.3	4.3	2.3	0.3	3.8	3.7	5.2	<0.2	ug/l	TM30/PM14
Dissolved Potassium #	9.8	10.2	5.2	13.7	5.7	9.5	7.3	7.8	12.9	9.9	<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	ug/l	TM30/PM14
Dissolved Sodium #	154.9	74.4	143.3	76.5	58.2	63.4	369.5	332.7	154.2	153.5	<0.1	mg/l	TM30/PM14
Dissolved Vanadium #	25.0	0.9	2.1	1.5	1.5	1.0	4.1	4.9	1.4	25.0	<0.6	ug/l	TM30/PM14
Dissolved Zinc #	<1.5	5.2	7.4	7.6	7.4	6.4	3.3	2.3	5.1	2.5	<1.5	ug/l	TM30/PM14
Mercury Dissolved by CVAF #	22.86	0.04	<0.01	<0.01	<0.01	<0.01	0.02	0.46	<0.01	30.28	<0.01	ug/l	TM61/PM38
PAH MS													
Naphthalene #	6.030	0.240	0.020	0.050	<0.014	<0.014	<0.014	0.190	0.030	3.720	<0.014	ug/l	TM4/PM30
Acenaphthylene #	0.080	0.030	<0.013	<0.013	<0.013	<0.013	<0.013	0.020	0.030	0.060	<0.013	ug/l	TM4/PM30
Acenaphthene #	3.080	0.330	<0.013	<0.013	<0.013	<0.013	<0.013	0.160	0.130	1.690	<0.013	ug/l	TM4/PM30
Fluorene #	1.930	0.440	<0.014	0.020	<0.014	<0.014	<0.014	0.060	0.260	1.110	<0.014	ug/l	TM4/PM30
Phenanthrene #	0.930	1.230	<0.011	<0.011	<0.011	<0.011	<0.011	0.050	0.030	0.580	<0.011	ug/l	TM4/PM30
Anthracene #	0.160	0.310	<0.013	<0.013	<0.013	<0.013	<0.013	0.020	<0.013	0.080	<0.013	ug/l	TM4/PM30
Fluoranthene #	0.120	0.400	<0.012	0.020	<0.012	<0.012	<0.012	0.020	0.020	0.080	<0.012	ug/l	TM4/PM30
Pyrene #	0.060	0.240	0.020	0.020	<0.013	<0.013	<0.013	0.020	0.040	0.040	<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.015	0.030	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	0.020	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ug/l	TM4/PM30
PAH 16 Total #	12.390	3.270	<0.195	<0.195	<0.195	<0.195	<0.195	0.540	0.540	7.360	<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	77	81	89	92	79	93	91	89	89	70	<0	%	TM4/PM30
Hexavalent Chromium	<2	<2	<2	<2	<2	<2	2	<2	<2	<2	<2	ug/l	TM38/PM0
Total Dissolved Chromium III	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	NONE/NONE

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle, Hays
Contact: Nick Roe
JE Job No.: 14/6324

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	31-33	34-36	37-39	40-42	43-45							
Sample ID	WS1-280514GW	WS17-280514GW	WS22-280514GW	WS28-280514GW	WS36-280514GW							
Depth												
COC No / misc												
Containers	HN P G	HN P G	HN P G	HN P G	HN P G							
Sample Date	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water							
Batch Number	1	1	1	1	1							
Date of Receipt	30/05/2014	30/05/2014	30/05/2014	30/05/2014	30/05/2014							
											LOD/LOR	Units	Method No.
Dissolved Arsenic #	<0.9	4.1	15.2	5.4	4.3						<0.9	ug/l	TM30/PM14
Dissolved Barium #	51.4	24.5	22.0	168.8	58.4						<1.8	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	0.5	<0.5						<0.5	ug/l	TM30/PM14
Dissolved Boron	57	126	238	294	126						<2	ug/l	TM30/PM14
Dissolved Cadmium #	0.09	<0.03	0.05	4.00	0.25						<0.03	ug/l	TM30/PM14
Total Dissolved Chromium #	<0.2	0.3	0.4	<0.2	0.4						<0.2	ug/l	TM30/PM14
Dissolved Copper #	<3	<3	9	5	<3						<3	ug/l	TM30/PM14
Dissolved Lead #	1.1	1.6	3.4	4.2	15.5						<0.4	ug/l	TM30/PM14
Dissolved Nickel #	1.0	0.9	2.1	<0.2	14.9						<0.2	ug/l	TM30/PM14
Dissolved Potassium #	10.8	12.4	13.8	12.8	47.4						<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<1.2	<1.2	<1.2	<1.2	<1.2						<1.2	ug/l	TM30/PM14
Dissolved Sodium #	63.7	23.6	181.8	274.3	89.7						<0.1	mg/l	TM30/PM14
Dissolved Vanadium #	1.1	6.2	40.9	3.0	15.6						<0.6	ug/l	TM30/PM14
Dissolved Zinc #	2.5	1.8	3.2	7.5	20.4						<1.5	ug/l	TM30/PM14
Mercury Dissolved by CVAF #	<0.01	0.01	1.24	0.03	0.04						<0.01	ug/l	TM61/PM38
PAH MS													
Naphthalene #	<0.014	0.030	<0.014	0.230	<0.014						<0.014	ug/l	TM4/PM30
Acenaphthylene #	<0.013	<0.013	0.030	<0.013	<0.013						<0.013	ug/l	TM4/PM30
Acenaphthene #	<0.013	<0.013	<0.013	0.110	<0.013						<0.013	ug/l	TM4/PM30
Fluorene #	<0.014	<0.014	<0.014	0.100	<0.014						<0.014	ug/l	TM4/PM30
Phenanthrene #	<0.011	<0.011	0.020	0.290	0.020						<0.011	ug/l	TM4/PM30
Anthracene #	<0.013	<0.013	0.060	0.070	<0.013						<0.013	ug/l	TM4/PM30
Fluoranthene #	<0.012	<0.012	0.070	0.170	<0.012						<0.012	ug/l	TM4/PM30
Pyrene #	<0.013	<0.013	0.130	0.110	<0.013						<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.015	<0.015	0.040	0.020	<0.015						<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	<0.011	0.080	<0.011	<0.011						<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.018	<0.018	0.120	<0.018	<0.018						<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.016	<0.016	0.070	<0.016	<0.016						<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.011	<0.011	0.030	<0.011	<0.011						<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01	<0.01	<0.01	<0.01						<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.011	<0.011	0.020	<0.011	<0.011						<0.011	ug/l	TM4/PM30
PAH 16 Total #	<0.195	<0.195	0.670	1.100	<0.195						<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	0.09	<0.01	<0.01						<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	0.03	<0.01	<0.01						<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	74	80	99	79	83						<0	%	TM4/PM30
Hexavalent Chromium	<2	<2	<2	<2	<2						<2	ug/l	TM38/PM0
Total Dissolved Chromium III	<2	<2	<2	<2	<2						<2	ug/l	NONE/NONE

Client Name: Geosyntec Consulting
Reference: GCU0124024
Location: Nestle, Hays
Contact: Nick Roe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/6324						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/6324

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
OC	Outside Calibration Range

JE Job No: 14/6324

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM4	16 PAH by GC-MS, modified USEPA 8270	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM4	16 PAH by GC-MS, modified USEPA 8270	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM0	No preparation is required.				
TM61	PS Analytical's (instrument manufacturer) method based on USEPA 1631. Determination of Mercury by Cold Vapour Atomic Fluorescence. Accredited to ISO 17025. All accreditation is matrix specific.	PM38	In-house method based on USEPA 1631. Samples are brominated to reduce all mercury compounds to Mercury (II) which is analysed as per TM016. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
NONE	No Method Code	NONE	No Method Code				
