Douglas Partners
Geotechnics • Environment • Groundwater

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REPORT
on
PHASE 2 CONTAMINATION ASSESSMENT

UTS BLACKFRIARS CAMPUS
CHIPPENDALE

Prepared for
HUTCHINSON BUILDERS

Project No. 45996.01
March 2009

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Glossary of Terms

AC	Asbestos cement
ANZECC	Australian and New Zealand Environmental & Conservation Council
AST	Above ground storage tank
B(a)P	Benzo(a)Pyrene (a Polycyclic Aromatic Hydrocarbon compound)
bgl	below ground level
BTEX	Benzene, Toluene, Ethyl Benzene, Xylene
C_6–C_9	Light hydrocarbon chain groups
C_{10}–C_{14}	Medium hydrocarbon chain groups
C_{15}–C_{28}	Heavy hydrocarbon chain groups
C_{29}–C_{36}	Heavy hydrocarbon chain
DEC	Department of Environment and Conservation (NSW)
DP	Douglas Partners Pty Ltd
EPA	Environmental Protection Authority
ha	Hectares
mg/kg	Milligrams per kilogram
mg/L	Milligrams per litre
NATA	National Association of Testing Authorities
NSW	New South Wales
ND(nd)	Not detected above the PQL
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PID	Photoionisation detector
ppm	Parts per million
PQL	Practical Quantitation Limit
%RPD	Relative percentage difference
TRH	Total Recoverable Hydrocarbons
TOPIC	Total Photoionisable Compounds
µg/L	Microgram per litre (or parts per billion)
UCL	Upper confidence limit of data set
UST	Underground storage tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This report details the methodology and results of a Phase 2 Contamination Assessment undertaken by Douglas Partners Pty Ltd (DP) on the Blackfriars Campus of the University of Technology Sydney, located on the corner of Blackfriars and Buckland Streets, Chippendale. The site is the subject of a proposed development including relocation of the childcare centre, student accommodation, student common facilities, and paved and grassed landscaping features. The existing heritage buildings will be retained and refurbished, whilst several new buildings will also be constructed.

At the time of the investigation, the subject site covered an irregularly shaped area of approximately 6,600 square metres, and was occupied by several heritage buildings (offices and residential), a childcare centre, timber hall, carparking and landscaping. Environmental assessment reports prepared by Coffey for the subject site in 1993/1994 identified past site uses including distillery, industrial (nature unknown) and school. The Coffey assessments also identified deep filling beneath the site, containing some elevated concentrations of Heavy Metals, Polycyclic Aromatic Hydrocarbons (PAH), and Total Petroleum Hydrocarbons (TPH). No significant groundwater contamination was reported.

The objectives of the phase 2 contamination assessment were to:-

- assess soil and groundwater conditions for contamination resulting from historical filling use of the property with regard to the proposed development;
- provide an opinion on the site's suitability for the proposed redevelopment; and
- Provide a Preliminary *in situ* Waste Classification and Acid Sulphate Soil (ASS) assessment.

The Phase 2 Contamination Assessment involved the following general scope of works:

- Review of the Coffey reports;
- Review of additional site history information, WorkCover NSW, and regional groundwater information;
- Soil sampling at a total of sixteen (16) locations spaced across the accessible areas of the site. This number complies with the NSW DECC sampling design guidelines. Note that the termination of hand augered bores was governed by augering difficulties;

- Screening of recovered soil samples for volatile vapours using a field portable photo-ionisation detector (PID);
- Installation of four (4) groundwater monitoring wells;
- Conducting laboratory analysis on selected soil samples at a NATA accredited analytical laboratory for a combination of the following potential contaminants:
  - Heavy Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn);
  - Total Petroleum Hydrocarbons (TPH);
  - Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene and Xylene – BTEX);
  - Polycyclic Aromatic Hydrocarbons (PAH);
  - Organochlorine Pesticides (OCP) / Polychlorinated Biphenyls (PCB);
  - Phenols;
  - Cyanide;
  - Asbestos;
  - Volatile Organic Compounds (VOC);
  - SPOCAS;
  - TCLP (leaching) for waste classification purposes.
- Conducting laboratory analysis on four groundwater samples for Heavy Metals, TPH, BTEX, PAH, Phenols, PCB, OCP, VOC and hardness.

Given the proposed land uses (ie. student accommodation, childcare, and student facilities) the laboratory test results were assessed against the health based criteria for residential development with accessible soils (childcare centre), and the health based criteria for residential development with minimal soil access (remainder of site). In additional, provisional phytotoxicity-based investigation levels for sandy loams were applicable in the area of the proposed landscape. With regard to petroleum hydrocarbons, the NSW EPA *Contaminated Sites: Guidelines for Assessing Service Station Sites* (1994) threshold concentrations for sensitive land were adopted as the site assessment criteria (SAC).

The fieldwork for the assessment revealed the presence of fill materials to depths ranging from about 2.0 m in the western portion to about 4.8 m in the eastern portion, overlying soft

to firm clay (alluvium) then sandstone bedrock. The bedrock was encountered at depths ranging from 3.8 m to 5.2 m depth. Groundwater was encountered in a number of bores ranging in depths between 2.3 m and 3.8 m below existing ground level.

The results of the soil analysis indicate that the majority of organic and inorganic contaminant concentrations in all sampled soils were within the adopted SAC. The exceptions were as follows:

- Concentrations of benzo(a)pyrene (ranging from 2.2 mg/kg to 36 mg/kg), exceeding the SAC, were detected in 13 out of 48 soil samples analysed;
- Concentrations of Total PAH (ranging from 31 mg/kg to 430 mg/kg), exceeding the SAC, were detected in 10 of the 48 soil samples analysed;
- Concentrations of TPH (C10-C36) of 1,360 mg/kg and 2,120 mg/kg, exceeding the SAC of 1,000 mg/kg, at Bore 1 and Bore 11;
- Sample 9/0.2-0.5 collected from the surfical filling had lead concentrations of 1,500 mg/kg, which exceeded the SAC (1,200 mg/kg); and
- Exceedances of PPILs for copper, lead, mercury, nickel and zinc were detected in several samples collected from the surficial filling.

No groundwater contamination issues were identified.

Based on the results of the assessment, it is considered that the site can be rendered suitable for the proposed redevelopment, subject to the preparation and implementation of a remedial action plan (RAP). The objective of the RAP will be to remove and/or manage potential exposure routes to the underlying contaminated materials (fill). Given the sporadic nature of the contaminant (primarily PAH) distribution and the inherent difficulties in excavating deep fill (with the presence of heritage buildings), a remediation method of “cap and contain” is considered the most appropriate method for the site. An Environmental Management Plan (EMP) will also be required for the long term management of the capping system, ensuring its long term integrity and safety for any persons potentially exposed to the capped materials.

Acid Sulphate Soil (ASS)

In general, the preliminary results indicted a low potential for the presence of ASS in the soils analysed which is in agreement with the risk map classification indicating that no known ASS occurrences were previously recorded in the area. However, due to the slight potential for the presence of ASS recorded in one of the samples, it is recommended that further ASS analysis should be conducted during the additional *ex situ* waste classification assessment of excavated material (ie. materials excavated for remediation and/or construction purposes).

Waste Classification

The filling encountered in the test bores is classifiable as GENERAL SOLID WASTE (NON-PUTRESCIBLE) in accordance with the DECC *Waste Classification Guidelines*, April 2008, provided that the material is not cross-contaminated with other material.

However, this is only a preliminary *in situ* waste classification. Further *ex situ* waste classification of the filling is recommended upon excavation and stockpiling. It should be noted that building rubble was encountered in the test bores, thus, there is a potential for asbestos to be present in the filling.

The levels of potential contaminants detected in the two natural clay samples analysed were within the referenced guidelines or below the laboratory practical detection limits. Due to the limited number of natural material samples selected for analyse, it is recommended that the natural soils be examined upon excavation to evaluate its VENM status (if required).

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REPORT ON
PHASE 2 CONTAMINATION ASSESSMENT
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1. INTRODUCTION

This report details the methodology and results of a Phase 2 Contamination Assessment undertaken by Douglas Partners Pty Ltd (DP) at the above site. The investigation was commissioned by Hutchinson Builders for development application purposes. The assessment also included a Preliminary *in situ* Waste Classification and Preliminary Acid Sulphate Soil (ASS) Assessment.

At the time of the current investigation, the subject site was occupied by a number of buildings operated by the University of Technology, Sydney (UTS), including a child care centre.

It is understood that the proposed development is to comprise the following:

- Demolition of the existing buildings (including the child care centre);
- Refurbishment of several existing buildings, including the relocation of the child care centre to the south-eastern corner of the site;
- Construction of a three-storey townhouse style student accommodation building;
- Construction of a four-storey apartment for student accommodation; and
- Formation of car parking, courtyards, and children's play area (part of child care centre.

A geotechnical investigation was conducted concurrently and is reported in *Report on Geotechnical Investigation*, February 2009 (DP Reference 45996).

Previously, Coffey Partners International (Coffey) has prepared a number of reports from 1993 to 1998. These have been reviewed in this report (refer to section 4.1).

The assessment included a site history review, drilling of sixteen test bores in the accessible areas of the subject site and installation of four groundwater wells (piezometers). Soil and groundwater samples were collected and analysed for a range of common organic and inorganic contaminants.

The aims of the current assessment were to:-

- Provide an assessment of the general potential for contamination of the site resulting from past and present site uses, subject to site constraints;
- Provide a Preliminary *in situ* Waste Classification;
- Provide a Preliminary ASS assessment;
- Based on the investigation results, comment on the likely suitability of the site for the proposed redevelopment and identify development constraints associated with site contamination issues;
- Assess the potential for off-site migration of contamination (through groundwater); and
- Enable development of a Remedial Action Plan (RAP), if required.

2. SCOPE OF WORKS

The scope of works was as follows:-

- Review reports prepared by Coffey;
- Review ASS Risk Map;
- Review WorkCover search records and groundwater bore searches;
- Conduct an underground services search prior to drilling with a view to locate detectable services using Dial-Before-You-Dig service and an electromagnetic sweep;
- Drill thirteen test bores at the selected locations across the site using a truck-mounted drill rig to maximum depths of 6.0 m below ground level (bgl);

- Drill three test bores using hand augers at locations around the chilcare centre (inaccessible to the drill rig) to a maximum depth of 0.6 m bgl;
- Representative samples (including 10% field replicates for QA/QC purposes) of soil/filling were collected at broadly regular intervals. The sampling depths were adjusted based on field observations (ie upon signs of contamination);
- All soil/filling samples were screened using a photoionisation detector (PID) to assess the presence of volatile organic compounds;
- Soil/filling samples from eight bores were screened for ASS. On the basis of the ASS screening, selected samples were selected for SPOCAS testing at a NATA accredited laboratory;
- Conduct laboratory analysis on 20 selected soil samples at a NATA accredited analytical laboratory for various combinations of the following potential contaminants:-
    - Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene and Xylene – BTEX) – 16 samples;
    - Total Petroleum Hydrocarbons (TPH) – 16 samples;
    - Heavy Metals – 20 samples;
    - Polycyclic Aromatic Hydrocarbons (PAH) – 20 samples;
    - Phenols – 10 samples;
    - Asbestos – 16 samples;
    - Cyanide – 10 samples;
    - Volatile Organic Compounds (VOC) - 4 samples;
    - Organochlorine Pesticides (OCP) / Polychlorinated Biphenyls (PCB) – 10 samples;
    - QA/QC sample (1 trip spike, 1 trip blank, 1 inter-laboratory replicates and 2 intra-laboratory replicates for heavy metals and PAH);
    - TCLP (leaching) for waste classification purposes – 6 samples; and
    - SPOCAS for ASS assessment purposes – 4 samples.
- Additional testing of fill samples for PAH (24 samples), once it was identified as the primary contaminant;
- Install groundwater monitoring wells at four locations. Upon well development and purging, conduct laboratory analysis on four groundwater samples for the following contaminants:

  - Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene and Xylene – BTEX);
  - Total Petroleum Hydrocarbons (TPH);
  - Heavy Metals;
  - Volatile Organic Compounds (VOC);
  - PAH;
  - Phenols;
  - PCB/OCPs;
  - Hardness;
  - QA/QC sample (1 intra-laboratory replicate for TPH and BTEX).
- Preparation of a Phase 2 Contamination Assessment report including a preliminary *in situ* waste classification and preliminary ASS assessment, providing an assessment of the potential for contamination of the site and general recommendations for further work, if required.
- Store remaining soil samples not analysed for a period of one month pending the need for further analysis.

3. SITE DESCRIPTION

The subject site forms an irregular, almost rectangular-shaped land parcel located at the north-eastern corner of Blackfriars and Buckland Streets, Chippendale, as shown on Drawing 1, Appendix A. The site is approximately 6,600 square metres in area. The local government authority is the City of Sydney Council.

The site is the Blackfriars Campus of the UTS. Specific features of the site include (refer to Photos 1 and 2, Appendix A):

- A two storey heritage-listed building (Building B2), located on the western boundary, and occupied by the Australian Learning and Teaching Council;
- A two storey heritage-listed building (Building B5), located on the eastern boundary, and used by the Faculty of Arts & Social Studies, International studies and China Research Centre. The campus security office is also located in this building;

- A timber clad demountable building (Building B1) located in the south-western corner and occupied by the offices of the CAMRA Project and Cultural Asset Mapping in Regional Australia;
- A two storey brick residence, labelled as “The Residence”, located in the south-eastern corner;
- A single storey timber hall, located in the north-eastern corner of the site;
- A single storey clad building, located in the north-western corner, used as the Blackfriars Children’s Centre. The building and surrounding children’s play areas are fenced off from the remainder of the site;
- Open, bitumen covered car parking facilities and landscaping (paved areas, lawns and gardens) between the buildings;
- Numerous small to large canopy trees are present within the site, particularly in the north-western corner and close to the western and southern site boundaries.

A hazardous materials survey is outside the scope of this assessment, and therefore the presence, or otherwise, of asbestos containing materials in the existing buildings is not known.

The site is bordered by a high brick wall (in some locations forming the wall of adjoining buildings) along the northern and eastern boundaries. Part of the wall close to the north-eastern corner is propped with steel members fixed into a concrete footing. The fencing along the southern and eastern boundaries comprises steel encased in sandstone columns and footings.

Reference may be made to Plan No 72875.DGN, prepared by Rygate & Company Pty Limited, in Appendix A for the existing site layout.

At the time of conducting the fieldwork for this assessment there was no visible evidence of potential underground or above ground petroleum storage systems.

Furthermore, there were no surface indicators of potential soil contamination such as staining, vegetation deterioration or die-back. The lawns were lush and foliage prominent.

Surrounding Land Use

The following land uses were noted in the area around the site:

To the north: Blackfriars Broadway Inn (3 storey building), a carwash and University of Notre Dame (Sydney Campus) buildings.

To the east: The University of Notre Dame (including a number of 3 to 4 storey buildings positioned apparently on the site boundary), Blackfriars Place and a 4 storey residential (possibly student accommodation) building

To the south: Blackfriars Street, commercial and residential properties beyond (typically 3 storeys in height)

To the west: Buckland Street and residential properties beyond (typically 3 storeys in height; probable student accommodation).

4. SITE HISTORY

A limited site historical information review was conducted comprising a review of the reports prepared by Coffey, a Department of Water and Energy (DWE) groundwater bore search and a WorkCover Records search.

4.1 Review of reports prepared by Coffey

The client provided the following reports prepared by Coffey to DP for review.

- *UTS Blackfriars Site – Investigations*, 2nd September, 1993;
- *Environmental Site Assessment UTS Blackfriars Development Chippendale*, September 1994;
- *Health and Safety Plan* (draft), August 1998;
- *Environmental Management Plan* (draft), August 1998; and
- *Site Management Plan*, August 1998.

4.1.1 UTS Blackfriars Site – Investigations, 2nd September, 1993

This report details the findings of a geotechnical and environmental investigation of a portion of the Blackfriars Infant School. The investigation was undertaken on the north-western corner of the current subject site (the location of the current childcare centre) in order to plan for the, then proposed childcare centre. The scope of work included the drilling of four boreholes to bedrock and the collection of environmental and geotechnical soil samples.

Historical records indicate that the site is on the edge of the former Blackwattle Swamp, and that it was used for various industrial purposes, including a distillery and flour mill.

The logs indicated that sandstone bedrock was encountered at depths of 5.4 m, 6.8 m, 8.3 m and 7.2 m below ground level (bgl) which was overlain by 2.3 - 3.9 m of fill and 3.4 - 8.3 m of natural sand. The fill was described as a mixture of sand, sandstone rubble, sandy clay, coal waste, bricks and glass fragments. Groundwater was encountered at about 3 m bgl.

Two samples form each borehole (eight in total between depths of 0.6 m and 2.2 m bgl) were analysed for TPH, PAH, and a suite of heavy metals (copper, lead, zinc, cadmium, chromium, arsenic, selenium and mercury). The regulatory guidelines and thresholds which were adopted were those recommended in the 1992 Australian and New Zealand Conservation Council (ANZECC) *Guidelines for the Assessment and Management of Contaminated Sites*. [Note: Other relevant, "landuse specific" guidelines, including the NEPM Guidelines on the Investigation Levels of Soil and Groundwater, have been issued since then.]

The laboratory results indicated that the level of copper exceeded the guideline in two locations, zinc in three locations, mercury in two locations and PAH in three locations. The exceedances were detected in the fill material between 1.1 m and 2.0 m bgl, although, the report stated that the contamination appeared to be restricted to the top 3.9 m fill material.

No evidence of hydrocarbons or solvents was observed during the drilling or in the retrieved groundwater samples.

Overall, the geotechnical recommendation was to incorporate deep bored footings taken to rock in the design of the childcare facility.

In terms of the environmental recommendations, Coffey indicated that *discussions with the NSW EPA indicated that extensive clean up of contaminated material may not be required provided that there is an adequate seal which will prevent infiltration of surface water and any airborne disturbance, and there is no connection between the material and groundwater, thus restricting off site migration of any dissolved contamination.* Coffey considered the presence of bitumen paving and the contaminated fill being above the water table to satisfy the above conditions. Although, Coffey also recommended that the top 1 m of fill in any unsealed areas be assessed for potential contamination. Should any contamination be reported, the areas should be covered with 300 to 500 mm of clean fill, followed by seeding and landscaping. Coffey also recommended that any material to be disposed to landfill, during the construction phase, be assessed further once stockpiled.

4.1.2 Environmental Site Assessment UTS Blackfriars Development Chippendale, September 1994

This assessment was required for redevelopment of the site into university buildings, a university residence and a childcare centre. The site condition was described as presently under redevelopment including the construction of underground services, pavements, buildings and landscaping. The report stated that the recommendations set out in the earlier report (Section 4.1.1 of this report) were superseded by the recommendations in this (1994) report.

An archaeological assessment was conducted by Casey and Lowe Associates in August 1993 and was reviewed as part of this report. The assessment revealed the following:

- Blackfriars School was established on the site in 1883;
- Prior to the school, the site was occupied by an industrial estate which was the largest in nineteenth century Sydney;
- In 1825, the Brisbane distillery was built over a large area, including the site. A brewery was added to the site later;
- Blackwattle creek which drained to the nearby Blackwattle swamp was dammed to create a reservoir beside the distillery. The path of Blackwattle creek is now occupied by a sewer line;
- In 1852, the distillery was taken over by Colonial Sugar Refining Company (formerly Australasian Sugar Company). During the refinery's occupation, complaints were made

about the pollution of the dam and Blackwattle swamp creek. The waste was later diverted into the Abercrombie Street sewer;

- In 1878, the refinery was moved, the buildings were removed and the land was later subdivided;
- The Department of Education bought the site and school buildings were completed in 1884;
- The original swamp creek survived into the 1890s;
- The playground was first tarred in 1886 - 1887.

The fieldwork involved the excavation of eleven test pits to a maximum depth of 3.1 m bgl. Eight soil samples were analysed for heavy metals, PAH, TPH, phenols, conductivity and pH.

The contaminant concentrations were compared to the ANZECC (1992) guidelines, Canadian Council of Ministers of the Environment (1991) *Interim Canadian Environmental Quality Criteria for Contaminated Sites* and the Dutch Ministry of Housing, Spatial Planning and Environment (1994) *Environmental Quality Objectives in the Netherlands*.

The laboratory results indicated that the level of copper and mercury exceeded the guidelines in five locations, lead and zinc in four locations, TPH (C_{15} - C_{28}) in one location and PAH in two locations. It was noted that higher heavy metal levels were detected in this investigation than in the earlier Coffey report (Section 4.1.1 of this report). Toxicity characteristic leaching procedure (TCLP) tests were also conducted on selected samples and found the contaminants in the soil are not mobile.

The report concluded that given the current state of the site and that contaminated fill probably exists beneath historical buildings, it seems there would be little benefit in remediating the on site contaminated soils. Coffey stated that:

The concept of leaving the contaminated soil in place and covering the soil in such a way that the risk of exposure to site users is substantially reduced, is considered a reasonable approach. *Reducing exposure of site users to contaminated soil needs to be considered in two parts, namely exposure during earthworks and exposure in the long term.*

The report sets out the methods of reducing the exposure in both cases. The following was recommended for the long term:

- Operations and maintenance manual contain warnings of underlying contaminated soils;
- Warning layer in turfed and garden beds;
- Trap doors and other entrances into building under spaces should be locked and clearly signposted;
- Where garden beds may be disturbed in the future, fences should be constructed to prevent access by site users;
- In the area of the childcare centre, a cover comprising 150 mm turfed topsoil overlying 150 mm compacted roadbase overlying a plastic warning layer and the 20 mm bitumen already covering the site. It was also recommended an additional plastic warning layer be placed between the topsoil and the child care centre building footprint;[*Note: meaning not clear, do they mean a second plastic warning layer be placed between the topsoil and compacted roadbase (or underlying material) over the footprint of the child care centre building?]*
- Soils beneath the university residence should be treated in the same way as the childcare centre, or by applying a sand or concrete or brick paving;
- Soil imported to the site should be assessed for contamination prior to placement; and
- Long term maintenance plan should be implemented to maintain the barrier system.

Overall, the report concluded that the risk of leachate migration into groundwater originating from the site is relatively low, however, groundwater assessment was recommended to determine if further management is required. Coffey recommended sampling from three locations (up-gradient, down-gradient and to provide flow direction information).

4.1.3 Health and Safety Plan (draft), August 1998

This document provided a general framework for protection of workers against the soil contamination. It outlined the responsibilities of the on-site workers, the controls (work and decontamination zones), the site hazards to be aware of, the safe work practices and the reporting of any breaches of the plan.

4.1.4 Environmental Management Plan (draft), August 1998

The purpose of this plan was to ensure that al soil material left on site is cover and that any soil material to be disposed off-site is carried out appropriately. It outlined a few rules that need to be followed.

4.1.5 This Plan was Produced to Manage the Soil Contamination through:

- Placement of protective barriers;
- Maintenance of protective barriers;
- Application of controls on site excavation works; and
- Application of controls on works underneath buildings where there are no soil covers.

At the time this report was prepared, the status of the site was as follows:

- Protective covers had been placed over the site except areas covered by buildings or pavement. In the area of the childcare centre, the cover comprised 150 mm turf topsoil overlying 50 mm concrete overlying an orange plastic warning layer. In other unpaved areas, the cover comprised 150 mm topsoil overlying an orange plastic warning layer;
- Timber barriers had been placed around the large trees;
- For excavation and work underneath buildings, a workplace health and safety plan must be developed;
- Trapdoors and other entrances need to be locked and signposted;
- The Operation and maintenance manual must state that works on site need to be carried out in accordance with this plan;
- EPA approval must be granted for off site removal of any soil underneath the warning layer;
- Site works must be conducted in a way that protects the environment.

Note that the plastic warning layer and timber barriers were not noted during the recent DP investigations.

The plan also stated that a biannual inspection should be undertaken to check the status of the soil and a report (including a review of excavation, disposal and safety records) should be provided to UTS.

4.2 Groundwater Bore Search

A NSW DWE (formerly Department of Natural Resources) groundwater bore search was conducted on the 10 February 2009. The DWE bore search results are provided in Appendix B. Seven bores were found within a 1 km radius of the site. Information was not available for one of these bores. All the bores were for monitoring purposes. The water bearing zones for two of the bores (109649 and 109648) were indicated as 3.2 - 6.2 m and 5.2 - 6.2 m respectively. Drillers logs were also available for Bores 109649 and 109648. Filling was encountered at depths between the surface and 4.8 m, silty sand between 4.8 m and 5.9 m, silty clay between 2.9 m and 4.9 m, silty sand between 4.9 m and 5.8 m and sandstone between 5.8 m and 7.20 m,

4.3 WorkCover Records

A search for dangerous goods licences registered with NSW WorkCover was conducted, and did not find any records of dangerous goods licences pertaining to the site. The notification letter is included in Appendix B.

5. GEOLOGY, TOPOGRAPHY AND HYDROGEOLOGY

The general topography of the site and environs appears to slope gently downwards to the north, towards Sydney Harbour. Based on the local topography, the inferred groundwater and stormwater flow would also be towards Sydney Harbour (north).

The Soil Landscape Map of Sydney (Soil Landscape Series Sheet 9130, Scale 1:100,000, 2002), prepared by the Soil Conservation Service of NSW, indicates that the site is located within a Disturbed Terrain; land that may be extensively disturbed by human activity including complete disturbance, removal or burial of soil, or landfill including soil, rock, building, and waste materials. The investigations by Coffey and DP indicated fill depths of between 2.0 m and 4.8 m below ground level.

Reference to the Sydney 1:100 000 Geological Series Sheet indicates that the site is underlain by stream alluvium and estuarine deposits (silty to peaty quartz sand, silt and clay) as well as man made filling. The natural deposits are considered to be mainly alluvium beneath the site.

Sandstone bedrock was encountered during the Coffey and DP investigations at depths ranging from 3.8 m and 8.3 m below ground level.

Free groundwater was not encountered during drilling for the DP investigation (2009). Groundwater was subsequently observed in four wells installed at the site at depths of between 2.08 m and 3.0 m below ground level. These finding confirm the Coffey findings of groundwater at about 3.0 m below ground level, reported in 1993. The results show little or no changes in groundwater levels beneath the site over a period of 15 years (note that some fluctuations may have occurred over that time).

Based on the measured groundwater levels and regional topography, the inferred direction of groundwater flow is towards the north. The groundwater is likely to feed into Blackwattle Bay, which is located approximately 1.3 km north of the subject site.

5.1 Acid Sulphate Soils

A review of digital data supplied by NSW Department of Environment and Climate Change based on 1:25,000 ASS Risk Mapping, 1994-1998 indicated that the site is located within an area of no known occurrences (refer to Drawing 2, Appendix A) however, relatively shallow groundwater is expected in the area. Therefore, a preliminary ASS assessment has been included as part of the overall assessment.

6. POTENTIAL CONTAMINANTS

Given the available information, it is considered that the potential sources of contamination include:-

- placement of imported filling to form and/ or level the site; and
- historical commercial / industrial site uses.

It is thus considered that the potential contaminants on the subject site may include:

- Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn);
- BTEX (Benzene, Toluene, Ethylbenzene and Xylene);
- VOCs (Volatile Organic Compounds);
- TPH (Total Petroleum Hydrocarbons),
- PAH (Poly Aromatic Hydrocarbons);
- OCP (Organochlorine Pesticides);
- PCB (Polychlorinated Biphenyls);
- Cyanide;
- Total Phenolics; and
- Asbestos.

7. INVESTIGATION PROCEDURE

7.1 Soil Sampling Procedures and Rationale

A total of sixteen test bores were adopted as part of this assessment. Thirteen of the bores were drilled using a truck-mounted drill rig with solid flight auger attachment. Three bores were hand augered due to lack of drilling rig access. Auger refusal was encountered on a hard surface at one location (Bore 7). The bore was relocated and is represented by Bore 7A in Drawing 1, Appendix A. Groundwater was not observed during auger drilling, however, groundwater was observed in the installed groundwater wells at least four days after drilling.

The adopted sampling density met the requirements laid down in the NSW EPA publication *Sampling Design Guidelines* (2006), which specifies, that for a site of 0.66 hectares, a minimum of sixteen sampling points is required to characterise the site.

The bore locations were selected to provide general site coverage and based on the site access restrictions.

Soil samples were collected at broadly regular intervals or upon signs of contamination. Field replicate samples were collected for QA/QC purposes.

The samples considered most likely to be contaminated from each bore were selected for analysis. The potential for contamination, with regard to each sample, was assessed based on the sample position within the profile, the type of materials involved (filling/ natural) and whether signs of environmental concern were noted (eg odours, staining). Note that, upon receipt of the initial test results, a further 24 fill samples were selected for PAH analysis, in order to assess more confidently the spread of PAH contamination across the site.

Notwithstanding the site constraints, it is considered that the current assessment provides an appropriate sampling programme for a general evaluation of the site condition with respect to its contamination potential. Sampling locations are indicated on Drawing 1 in Appendix A.

Environmental sampling was performed according to standard operating procedures outlined in the DP *Field Procedures Manual*. All sampling data was recorded on DP chain of custody sheets. The general soil sampling procedure comprised:-

- transfer of samples into laboratory-prepared glass jars, and capping immediately with teflon lined lids;
- collection of 10% duplicate samples for QA/QC purposes;
- labeling of sample containers with individual and unique identification, including project number, sample location and sample depth;
- placement of the sample jars and replicate sample bags into a cooled, insulated and sealed container for transport to the laboratory; and
- One trip spike and one trip blank were subjected to the same treatment as the samples.

Envirolab Services Pty Ltd (ELS) and LabMark, both laboratories accredited by the National Association of Testing Authorities (NATA), were employed to conduct the soil sample analysis. Both laboratories are required to carry out routine in-house QC procedures.

7.2 Installation of Groundwater Wells and Groundwater Sampling

Wells were installed in Test Bores 1, 4, 7 and 8 to a maximum depth of 5.8 m bgl. Following completion of drilling, 50 mm diameter, acid washed, class 18, PVC casing and machine slotted, well screen was installed into the test bores. The wells were completed with a gravel pack and a bentonite plug of at least 0.5 m thickness. The piezometers were finished with a gatic cover flush with the ground surface. Piezometer construction details are presented in the Test Bore Reports Appendix C.

Following installation, the wells were left to stabilize and then developed between four and six days after installation, using a typhoon pump or hand bailer to remove approximately three well-volumes or until dry to ensure an effective hydraulic connection between the well and the formation. Note: the depths to groundwater table were measured prior to development. Wells 7 and 8 were then sampled immediately after, as they recovered soon

after development, whereas Wells 1 and 4 were left for 2 days before sampling as they recovered slowly.

The collection of groundwater samples was carried out using a geopump or hand bailer, in accordance with the methodology prescribed in the Standard DP field procedures. The samples appeared slightly turbid and were subject to filtration through a 0.45 μm filter prior to heavy metal analysis.

Sample handling and transport procedures were conducted as set out below:-

- sample containers were labeled with individual and unique identification, including project number and sample number;
- collecting 10% replicate samples for QA/QC purposes;
- samples were placed in insulated coolers and maintained at a temperature of approximately 4°C until transported to the analytical laboratory, and
- Chain–of-Custody documentation was maintained at all times and countersigned by the receiving laboratory on transfer of samples.

All groundwater samples were dispatched to ELS for analysis.

7.3 Data Quality Objectives

The scope of work has been devised broadly in accordance with the seven step data quality objective process, as defined in Australian Standard *Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds (AS 4482.1 – 2005).* The seven step DQO process is as follows:

1) State the Problem

2) Identify the Decision

3) Identify Inputs to the Decision

4) Define the Boundary of the Assessment

5) Develop a Decision Rule

6) Specify Acceptable Limits on Decision Errors

7) Optimize the Design for Obtaining Data

7.3.1 State the Problem

The site has been historically used for commercial/industrial and then educational purposes. The purpose of the assessment is to provide data to evaluate the status of the site with respect to contamination and to assess whether there are indications that:

- Soil contamination presents an unacceptable risk to current/future users of the site under a mixed child care, accommodation and educational land use; and
- Contamination presents a significant risk of harm (SROH) as defined by the *Contaminated Land Management Act 1997* (NSW) to human health or the environment.

7.3.2 Identify the Decision

In assessing the analytical data against guideline levels for human health, the site conditions can be stated to meet the human health based guidelines if:

- The 95% Upper Confidence Limit (UCL) of the average concentrations for a data set of samples of like material complies with the adopted criteria;
- Individual concentrations of analytes (non-volatile) are less than 250% of the adopted guideline value; and
- The standard deviation of the population is <50% of the guideline.

7.3.3 Identify Inputs to the Decision

The primary inputs in assessing the presence of contamination in soil and groundwater are as follows:

- Historical site information, records, previous reports and site observations;
- Published guidelines appropriate to the proposed future land use and published guidelines for protection of the environment;
- Field investigation techniques to assess contamination as per relevant DECC guidelines and DP's standard field procedures; and
- Field observations and analytical results.

7.3.4 Define the Boundary of the Assessment

The boundaries of the assessment were the site boundaries indicated on Drawing 1, Appendix A.

7.3.5 Develop a Decision Rule

The analytical results were evaluated against the relevant guidelines and background concentrations, where relevant.

7.3.6 Specify Acceptable Limits on Decision Errors

The assessment was based on a grid based sampling program to identify potential contamination across the site.

Specific limits for the acceptability of data obtained in this project would generally be in accordance with the appropriate guidelines specified in NEPM (1999) for the collection of environmental samples. Specific limits associated with sample handling and laboratory Quality Assurance and Quality Control are detailed in Appendix F.

7.3.7 Optimise the Design for Obtaining Data

The sampling programme for the site was that of a Phase 2 Contamination Assessment. The sampling density meets the recommended sampling frequency specified in *Sampling Design Guidelines* (2006) for characterisation of a site of 0.66 ha.

To optimise the investigation, all soil samples collected were screened using photoionisation detector (PID). The interpretation of PID values along with site observations allowed for better assessment of investigation samples to determine the analytical programme and the need, if any, for further investigation.

8. SELECTED COMPARATIVE GUIDELINES

8.1 Soil

Following redevelopment, the site use will be a combination of child care, student accommodation and educational. On the basis of the proposed use of the site, the relevant assessment criteria included the NSW DEC publication *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme 2nd Edition* (2006*),* Health-Based Investigation Levels for residential with gardens and accessible soil (HIL Column 1), applicable in the area of the proposed childcare centre, and Health-Based Investigation Levels for residential with access to soils (HIL Column 2), applicable to the remainder of the site. In additional, provisional phytotoxicity-based investigation levels for sandy loams (PPIL Column 5) were applicable in the areas of the proposed landscape.

With respect to the petroleum hydrocarbons, (TPH and BTEX), NSW EPA publication *Contaminated Sites Guidelines for Assessing Service Station Sites (*1994*),* Threshold Concentrations for Sensitive Land use were adopted.

In cases where Australian criteria are not available, then internationally recognized site assessment criteria such as Dutch Intervention Values and USEPA Regional IX PRG levels are adopted as screening reference. It is noted that these international standards are not endorsed by DECC, but are considered relevant as useful assessment screening values.

The site acceptance criteria (SAC) for soil/ filling and their source documents are detailed in Tables 2 and 3.

A contaminant concentration detected above the threshold concentration in soil/ filling material is considered to be significant if:

i) The concentration of the contaminant is more than 2.5 times the SAC. Any location more than 2.5 times the SAC may be classified as a 'hotspot', requiring further assessment/ management.

ii) The calculated 95% Upper Confidence Limit average (excluding any 'hotspot' concentrations) of the data set for the contaminant exceeds the health-based SAC [Note that statistical analysis does not apply to the assessment of PPILs];

iii) The standard deviation of the results is greater than 50% of the SAC.

Providing that the 95% UCL average is within the SAC, and no concentrations of the contaminants are at hotspot level, minor exceedances of the SAC may be considered to pose insignificant human health risk under the proposed land-use.

Table 2 – Site Assessment Criteria for Soil/ Filling

Contaminant	HIL Column 1	HIL Column 2	PPIL Column 5	Guidelines
TPH				
$C_6 – C_9$	65 mg/kg		-	NSW EPA[1] Contaminated Sites *Guidelines for Assessing Service Station Sites* (1994) threshold concentrations for sensitive land use-soils.
$C_{10} – C_{36}$	1000 mg/kg		-	
BTEX	1 mg/kg		-	
Benzene	130[a] mg/kg		-	
Toluene	50[a] mg/kg		-	
Ethylbenzene	25[a] mg/kg		-	
Xylene				
Metals				NSW EPA Contaminated Sites *Guidelines for the NSW Site Auditor Scheme* (2006) Health-Based Investigation Levels for residential with gardens and accessible soil ***(HIL Column 1)*** applicable in the area of the proposed childcare centre.
Arsenic (total)	100 mg/kg	400 mg/kg	20 mg/kg	
Cadmium	20 mg/kg	80 mg/kg	3 mg/kg	
Chromium	12,000 mg/kg	48,000 mg/kg	400 mg/kg	
Copper	1000 mg/kg	4000 mg/kg	100 mg/kg	
Lead	300 mg/kg	1200 mg/kg	600 mg/kg	
Mercury	15 mg/kg	60 mg/kg	1 mg/kg	
Nickel	600 mg/kg	2400 mg/kg	60 mg/kg	
Zinc	7000 mg/kg	28000 mg/kg	200 mg/kg	
Total Phenols	8500 mg/kg	34,000 mg/kg	-	Health-Based Investigation Levels for residential with minimal access to soils ***(HIL Column 2) applicable*** to the remainder of the site.
PAH				
Total	20 mg/kg	80 mg/kg	-	
Benzo(a)Pyrene	1 mg/kg	4 mg/kg	-	
OCP				Provisional phytotoxicity-based investigation levels for sandy loams ***(PPIL Column 5)*** applicable in the area of the proposed landscape.
aldrin + dieldrin	10 mg/kg	40 mg/kg	-	
chlordane	50 mg/kg	200 mg/kg	-	
DDT (including DDD, DDE, DDT)	200 mg/kg	800 mg/kg	-	
Heptachlor	10 mg/kg	40 mg/kg	-	
PCB (total)	10 mg/kg	40 mg/kg	-	
Total Cyanide	500 mg/kg	2000 mg/kg	-	
OPP	None available			
Asbestos	No asbestos present in soil at the surface		-	Correspondence from NSW EPA Director of Contaminated Sites to Accredited Site Auditors

[1] NSW EPA is now part of the NSW Department of Environment and Conservation (DEC).

Table 3 –VOC Threshold Concentration for Soil (mg/kg)

Analyte	Units	Screening Criteria	
		Region IX	Dutch Intervention
1,1,1,2-tetrachloroethane	mg/kg	3.2	
1,1,1-trichloroethane	mg/kg	1200	10
1,1,2,2-tetrachloroethane	mg/kg	0.41	50
1,1,2-trichloroethane	mg/kg	0.73	0
1,1-dichloroethane	mg/kg	510	0.3
1,1-Dichloroethene	mg/kg	510	-
1,1-dichloropropene	mg/kg	-	-
1,2,3-trichlorobenzene	mg/kg	-	-
1,2,3-trichloropropane*	mg/kg	0.034	-
1,2,4-trichlorobenzene	mg/kg	62	-
1,2,4-trimethyl benzene	mg/kg	52	-
1,2-dibromo-3-chloropropane	mg/kg	0.46	-
1,2-dibromoethane	mg/kg	0.032	-
1,2-dichlorobenzene	mg/kg	600	30
1,2-dichloroethane	mg/kg	0.28	4
1,3,5-trimethyl benzene	mg/kg		-
1,3-dichlorobenzene	mg/kg	530	30
1,3-dichloropropane	mg/kg	100	2
1,4-dichlorobenzene	mg/kg	3.4	30
2,2-dichlorpropane	mg/kg	-	-
2-chlorotoluene	mg/kg	-	-
4-chlorotoluene	mg/kg	-	-
4-isopropyl toluene	mg/kg		-
Bromobenzene	mg/kg	28	-
Bromochloromethane	mg/kg	-	-
Bromodichloromethane	mg/kg	0.82	-
Bromoform	mg/kg	62	-
Bromomethane	mg/kg	3.9	-
Carbon tetrachloride	mg/kg	0.25	-
Chlorobenzene	mg/kg	150	30
Chloroethane	mg/kg	3	-
Chloroform	mg/kg	0.22	-
Chloromethane	mg/kg	47	-
Cis-1,2-dichlorethene	mg/kg	43	1
cis-1,3-dichloropropene	mg/kg	-	-
Dibromochloromethane	mg/kg	1.1	-
Dibromomethane	mg/kg	-	-
Dichlorodifluoromethane	mg/kg	94	-
Hexachlorobutadiene	mg/kg	6.2	5
Isopropylbenzene	mg/kg	-	-
Napthalene	mg/kg	-	40
n-butyl benzene	mg/kg	240	-
n-propyl benzene	mg/kg	240	-
Sec-butyl benzene	mg/kg	220	-
Styrene	mg/kg	1700	100
Tert-butyl benzene	mg/kg	390	-
Tetrachloroethene	mg/kg	0.48	4
Trans-1,2-dichloroethene	mg/kg	-	1
trans-1,3-dichloropropene	mg/kg	-	-
Trichlorodifluoromethane	mg/kg	-	-
Trichloroethene	mg/kg	-	60
Trichlorofluoromethane	mg/kg	390	-
Vinyl Chloride	mg/kg	0.079	0.01

ASSESSMENT CRITERIA

Region 9 PRG for residential soil - HQ = 1

Region 9 PRG - for residential Soil Cancer Risk = 1x 10^{6}

8.2 Groundwater

Sydney Harbour is considered to be the likely ultimate receiving body for groundwater sourced from the site, whereas the groundwater in the immediate environ may be classified as a "fresh water" ecosystem. On this basis, the groundwater investigation levels (GILs) were selected for the protection of 95% of species for a freshwater ecosystem (a more conservative approach than marine based criteria) in line with DECC guidance.

The guidelines selected as reference for groundwater in this assessment were:-

- *Guidelines for Fresh and Marine Water Quality*' (2000) Australia and New Zealand Environment and Conservation Council (ANZECC). The trigger values for the protection of 95% species for a fresh water ecosystem were used where available. In the absence of the 95% level of protection trigger values the moderate and low reliability trigger values and/or other recognized standing screening criteria were also referenced.

In cases where Australian criteria are not available, then internationally recognized site assessment criteria such as Dutch Intervention Values and USEPA Regional IX PRG levels are adopted as screening reference. It is noted that these international standards are not endorsed by DECC, but are considered relevant as useful assessment screening values.

The adopted GIL and their source documents are provided in Tables 4 and 5.

Table 4 – Groundwater Investigation Levels (GIL)

Contaminant	Adopted Criteria (GIL)	Rationale
Metals		ANZECC (2000) *Australian Water Quality Guidelines for the protection of 95% of freshwater species* *Note: Result table 11 has been adjusted for hardness*
Arsenic (V)	13 µg/L	
Cadmium	0.2 µg/L	
Chromium (VI)	1 µg/L	
Copper	1.4 µg/L	
Lead	3.4 µg/L	
Mercury	0.6 µg/L	
Nickel	11 µg/L	
Zinc	8 µg/L	
TRH		Due to the absence of high reliability NSW EPA or ANZECC guidelines for TPH* the Airport (Environment Protection) Regulations (1997), Schedule 2 Water Pollution Accepted Limits: Table 1.03 – Accepted limits of contamination was adopted as a screening criteria
$C_6 – C_9$	150 µg/L	
$>C_9$	600 µg/L	
BTEX		ANZECC (2000) *Australian Water Quality Guidelines for the protection of 95% of freshwater species* NSW EPA[2] Contaminated Sites *Guidelines for Assessing Service Station Sites* (1994) *Threshold concentrations for sensitive land use, Protection of Aquatic Ecosystem* is adopted in the absence of other comprehensive investigation levels for toluene and ethyl benzene in groundwater.
Benzene	950 µg/L	
Toluene	300 µg/L	
Ethylbenzene	140 µg/L	
Xylene	550 µg/L	
PAH		ANZECC (2000) *Australian Water Quality Guidelines for the protection of 95% of freshwater species* It is noted that ANZECC only publishes a low reliability value for phenanthrene. For reference purposes *Dutch Intervention Levels, Ministry of Housing, Spatial Planning and Environment, 2000* for phenanthrene in groundwater are 5 µg/L
Total	Not specified	
Benzo(a)Pyrene	Not specified	
Naphthalene	16 µg/L	
phenanthrene	2 µg/L	
OCP		ANZECC (2000) *Australian Water Quality Guidelines for the protection of 95% of freshwater species*
Chlordane	0.08 ug/L	
DDT	0.01 ug/L	
Endosulfan	0.2 ug/L	
Endrin	0.02 ug/L	
Heptachlor	0.09 ug/L	
PCB		
Total	Not specified	
Aroclor 1242	0.6 ug/L	
Aroclor 1254	0.03 ug/L	
Total Phenols	320 ug/L	

* Other than a 'low reliability' final chronic value of 7 µg/L for petroleum hydrocarbon. This threshold was not adopted as detection limits in the order of 7 µg/L are not routinely achievable by NATA accredited laboratories.

[2] NSW EPA is now part of the NSW Department of Environment and Conservation (DEC).

Table 5- Laboratory Results of VOCs in Groundwater

		Screening Criteria		
		ANZECC (2000)	Region IX	Dutch Intervention
1,1,1,2-tetrachloroethane	µg/L		0.43	
1,1,1-trichloroethane	µg/L	270	3200	300
1,1,2,2-tetrachloroethane	µg/L	400	0.055	
1,1,2-trichloroethane	µg/L	6500	0.2	130
1,1-dichloroethane	µg/L	90	810	900
1,1-Dichloroethene	µg/L	700	340	
1,1-dichloropropene	µg/L	500		
1,2,3-trichlorobenzene	µg/L	10		
1,2,3-trichloropropane	µg/L		0.0056	
1,2,4-trichlorobenzene	µg/L	170		
1,2,4-trimethyl benzene	µg/L		12	
1,2-dibromo-3-chloropropane	µg/L		0.048	
1,2-dibromoethane	µg/L		0.0056	
1,2-dichlorobenzene	µg/L	160	370	
1,2-dichloroethane	µg/L	1900	0.12	400
1,2-dichloropropane	µg/L	900	0.16	
1,3,5-trimethyl benzene	µg/L		12	
1,3-dichlorobenzene	µg/L	260	180	
1,3-dichloropropane	µg/L	1100	120	
1,4-dichlorobenzene	µg/L	60	0.5	
2,2-dichlorpropane	µg/L			
2-chlorotoluene	µg/L			
4-chlorotoluene	µg/L			
4-isopropyl toluene	µg/L			
Benzene	µg/L	950		30
Bromobenzene	µg/L		20	
Bromochloromethane	µg/L			
Bromodichloromethane	µg/L		1.1	
Bromoform	µg/L		8.5	
Bromomethane*	µg/L		8.7	
Carbon tetrachloride	µg/L	240	0.17	
Chlorobenzene	µg/L	55	110	
Chloroethane*	µg/L		4.6	
Chloroform	µg/L	370	0.17	400
Chloromethane*	µg/L		160	
Cis-1,2-dichlorethene	µg/L		61	
cis-1,3-dichloropropene*	µg/L			
Dibromochloromethane	µg/L		0.13	
Dibromomethane	µg/L			
Dichlorodifluoromethane*	µg/L			
Ethylbenzene	µg/L	80	1300	150
Hexachlorobutadiene	µg/L		0.86	
Isopropylbenzene	µg/L	30	6.2	
m+p-xylene	µg/L	200+75		
Napthalene	µg/L	16	6.2	70
n-butyl benzene	µg/L			
n-propyl benzene	µg/L		240	
o-xylene	µg/L	350	210	
Sec-butyl benzene	µg/L		240	
Styrene	µg/L		2100	300
Tert-butyl benzene	µg/L		240	
Tetrachloroethene	µg/L	70	0.1	40
Toluene	µg/L	180	720	1000
Trans-1,2-dichloroethene	µg/L		120	
trans-1,3-dichloropropene*	µg/L			
Trichlorodifluoromethane*	µg/L		1300	
Trichloroethene	µg/L	330	0.028	500
Vinyl Chloride	µg/L	5	100	0.02

Assessment Criteria

ANZECC 95% LOP freshwater

ANZECC low reliability trigger value for freshwater

ANZECC moderate reliability trigger value

Region IX PRG for tap water - HQ = 1

Region IX PRG - Tap Water Cancer Risk = 1x 10^{-6}

ANZECC - interim indicative value only

8.3 Preliminary *in situ* Waste classification

With regard to the filling material, the preliminary *in situ* waste classification assessment was conducted with reference to the NSW DECC *Waste Classification Guidelines* (April 2008). According to the new guidelines, waste material is to be assessed by the following Six Step process (Table 6).

Table 6: Six step process for waste classification.

Steps	Description
1	Is the waste Special Waste?
2	Is the waste Liquid Waste?
3	Has the waste been pre-classified?
4	Is the waste Hazardous Waste?
5	Chemical Assessment in accordance with the specified total and leachable contaminant concentration thresholds
6	Is the waste putrescible?

In particular, with regard to Step 6, the Guideline states that a final test may be needed to determine whether the waste is putrescible, and a number of evaluation methods have been outlined. Nevertheless, DECC clarified, through telephone discussions, that a determination of whether the putrescibles waste test has to be conducted can be made based on the observed characteristics of the material.

With regard to the natural soils, in view of the absence of specific guidelines endorsed by DECC on virgin excavated natural material (VENM), the following guidelines were referenced:

- *Guideline 1*: Environmental Soil Quality Guideline 'Background Ranges', as given in the Schedule B(1) NEPC *Guidelines on the Investigation Levels for Soil and Groundwater* (1999);

In addition, the following guidelines were used as screening references:

- *Guideline 2*: The lower of the Health-based [soil] investigation levels for residential sites with accessible soils as specified in NSW EPA *Guidelines for the NSW Site Auditors Scheme (1998)*; and
- *Guideline 3*: With respect to TPH and BTEX, threshold concentrations [in soil] for sensitive land use from NSW EPA's *Guidelines for Assessing Service Station Sites,* 1994 (no comprehensive TRH or BTEX health-based criteria are available in *Guidelines for the NSW Site Auditors Scheme*).

8.4 Preliminary Acid Sulphate Soils Assessment

The action criteria for ASS are sourced from the ASS Management Advisory Committee (ASSMAC) *Acid Sulphate Soils Assessment Guidelines* (1998). With respect to the soils observed at the site, the results should not exceed the action criteria for sands to sandy loams (coarse texture). The Action Criteria are listed in Table 7.

Table 7 - ASSMAC Action Criteria

Screening Criteria		Threshold[3]
Laboratory Results pH^	pH_f	<4[1]
	pH_{fox}	<3.5[2]
	Change	<1[2]
Acid Trail (mol H+/tone	TPA	18
	TSA	18
Sulphur trail (%)	S_{pos}	0.03

Notes:
TPA Total Potential Acidity
TSA Total Sulphidic Acidity (TPA-TAA)
S_{POS} Peroxide oxidisable sulphur
S_{nas} Net acid soluble sulphur
1. for Actual ASS
2. Indicative value only, for Potential ASS
3. ASSMAC Action Criteria for disturbance of greater than 1000 tonnes of material
^ pH_f non-oxidised pH
pH_{fox} oxidised pH
Change $pH_{fox} – pH_f$
ND Not Defined

9. RESULTS OF INVESTIGATION

9.1 Field Observations: Soil

Sixteen bores were drilled to a maximum depth of 6.0 m on 4, 5, 6 and 11 February 2009 in the accessible areas of the site. Soil samples were collected from all bores at broadly regular intervals, at changes in the strata or upon signs of contamination. Details of the sub-surface conditions encountered during the course of the investigation are included in the Test Bore Report Sheets together with notes describing the classification methods and descriptive terms (Appendix C). The bore lithology (Table 8) is described below.

Asphalt was encountered in Bores 1-5, 11 & 15 at depths between the surface and 0.04 m bgl. Filling generally comprising clayey sand/sand/clay/silty sand/sandy clay material with various inclusions (viz. gravel, brick, concrete, plastic and sandstone fragments) encountered in all test bores. Ash and slag inclusions were encountered in the filling of Bores 3, 6, 10 and 11. Railway ballast was encountered in the filling of Bore 8. The depth of filling ranged between 1.6 m and 4.1 m bgl.

Natural material comprising clay, sandy clay and sandstone was encountered in all test bores apart from test bores 7 and 9 -11 (which were discontinued at shallow depths due to auger refusal). The depth of the clay material ranged between 1.6 m and 6.0 m bgl. Sandy clay material was encountered only in Bore 14 at a depth of 3.8 m. Sandstone was encountered in Bores 1 and 7A, at a depth of 3.9 m and 4.9 m, respectively.

Test bores 7 and 9 -11 were discontinued at 1.2 m, 0.6 m, 0.1 m and 0.35 m bgl, respectively, due to auger refusal on sandstone boulder filling and concrete and due to possible underground services. [Note: Bore 7 was replaced by Bore 7A]

Free groundwater was not observed while augering, with the exception of Bore 5 at a depth of 3.2 m.

Table 8 – Bore Lithology

Sampling Location	Asphalt	Filling	Clay	Sandy Clay	Sandstone	Completion Depth
1	0-0.04	0.04-2.2	2.2-3.9	-	3.9-5.9	5.9
2	0-0.04	0.04-3.2	3.2-3.5	-	-	3.5
3	0-0.04	0.04-3.6	3.6-4.5	-	-	4.5
4	0-0.03	0.03-4.1	4.1-6.0	-	-	6.0
5	0-0.01	0.01-1.6	1.6-3.5	-	-	3.5
6	-	0-3.6	3.6-4.5	-	-	4.5
7	-	0-1.2	-	-	-	1.2 (r)
7A	-	0-2.2	2.2-4.9	-	4.9-5.6	5.6
8	-	0-3.2	3.2-5.8	-	-	5.8
9	-	0-0.6	-	-	-	0.6 (r)
10	-	0-0.1	-	-	-	0.1(r)
11	0-0.02	0.02-0.35	-	-	-	0.35 (r)
12	-	0-2.2	2.2-5.0	-	-	5.0
13	-	0-3.5	3.5-4.0	-	-	4.0
14	-	0-3.0	3.0-3.8	3.8-4.5	-	4.5
15	0-0.04	0.04-3.2	3.2-4.5	-	-	4.5
16	-	0-3.2	3.2-5.0	-	-	5.0

Note: (r) - auger refusal

9.2 Field Observations: Groundwater

Groundwater levels were recorded prior to well development and purging/sampling (Table 9). The water was noted to be slightly turbid.

Table 9 – Groundwater Levels

Well	Installation Date	Groundwater Levels Recorded (prior to well development)		Groundwater Levels Recorded (prior to purging and sampling)	
		Date of well Development	Water Level (m bgl)	Date of purging and sampling	Water Level (m bgl)
1	6/2/09	10/2/09	2.08	12/2/09	2.03
4	4/2/09	10/2/09	2.93	12/2/09	3.10
7	5/2/09	10/2/09	2.26	10/2/09	3.00
8	5/2/09	10/2/09	3.00	10/2/09	3.00

Note: bgl below ground level

9.3 Total Photoionisable Compounds (TOPIC) Results

Selected soil samples were screened for the presence of Total Photo-Ionisable Compounds (TOPIC) using a calibrated Photo-Ionisation Detector (PID). The TOPIC results give a general indication of the likely presence of volatile organic compounds prior to dispatch to the laboratory. It should be noted that the PID results are used for indicative purposes only. The accuracy of PID screening can be affected by the presence of interferences in the soil gas, including elevated moisture levels.

The replicate soil samples collected in zip-lock plastic bags were allowed to equilibrate under ambient temperatures before TOPIC screening. PID levels are indicated on the Borehole logs (Appendix C). The PID readings were typically below 5 ppm, indicating no signs of notable organic compounds and are representative of background levels.

9.4 Analytical Results

The results of laboratory analysis are summarised in Tables 10 (soil) and 11 (groundwater), with NATA Laboratory Reports provided in Appendix D.

Table 10 - Results of Soil Analysis

(All results in mg/kg unless otherwise stated)

Sample ID	Natural / Filling	Heavy Metals									PAH				TPH		Benzene	Toluene	Ethylbenzene	Total Xylene	VOCs	PCB	OCP[6]	OPP	Total Phenols	Cyanide	Asbestos
		As	Cd	Cr[1]	Cu	Total Pb	TCLP Pb[7]	Hg	Ni	Zn	Total B(a)P[4]	TCLP B(a)P[4,7]	Total +ve PAH	TCLP +ve PAH[7]	C6-C9	C10-C36											
Area of the Proposed Childcare Centre																											
3/0.3-0.5	F	9	<0.5	11	60	290	0.09	**2.6**	11	84	**2.2**	<0.001	**30.9**	<0.002	<25	130	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
3/0.7-1.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
3/1.2-1.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
3/1.7-2.0	F	<4	<0.5	15	3	19		<0.1	3	2	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
4/0.3-0.5	F	<4	<0.5	7	32	100	0.08	0.8	5	89	0.7	<0.001	7.7	<0.002	<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
4/1.2-1.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
4/1.7-2.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
14/0.3-0.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
14/1.2-1.5	F	-	-	-	-			-	-	-	0.07		0.27		-	-	-	-	-	-	-	-	-	-	-	-	-
14/2.2-2.5	F	<4	<0.5	5	3	14		<0.1	<1	15	0.05		0.75		<25	<100	<0.5	<0.5	<1	<3	<2.0	-	-	-	-	-	NAD
15/0.3-0.5	F	<4	<0.5	8	6	29		0.1	2.0	11	<0.05		<0.2		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
15/0.7-1.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
15/2.2-2.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
Remaining Site Area																											
1/0-0.5	F	<4	<0.5	14	26	88		<0.1	8	100	**21**	<0.001	**238.5**	0.001	<25	**1360**	<0.5	<0.5	<1	<3	-	<1	<0.1	<0.1	<5	<0.5	NAD
1/0.7-1.0	F	-	-	-	-			-	-	-	**7.8**		74.3		-	-	-	-	-	-	-	-	-	-	-	-	-
2/0.3-0.5	F	-	-	-	-			-	-	-	2.9		30.1		-	-	-	-	-	-	-	-	-	-	-	-	-
2/0.7-1.0	F	<4	<0.5	3	5	25		<0.1	2	5	0.2		1.8		-	-	-	-	-	-	<2.0	<0.1	<0.1	<0.1	<5	<0.5	NAD
2/1.7-2.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
2/3.2-3.5	N	<4	<0.5	19	2	10		<0.1	1	22	<0.05		<0.2		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	-
5/0.3-0.5	F	<4	<0.5	7	18	50		<0.1	4	44	0.8		8.3		<25	<100	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	NAD
5/1.2-1.5	F	-	-	-	-			-	-	-	0.06		0.26		-	-	-	-	-	-	-	-	-	-	-	-	-
6/0.0-0.1	F	<4	<0.5	10	16	49		<0.1	6	53	0.7		6.5		-	-	-	-	-	-	-	-	-	-	-	-	NAD
6/0.3-0.5	F	-	-	-	-			-	-	-	**36**	<0.001	50.77	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-
6/0.7-1.0	F	-	-	-	-			-	-	-	0.7		8.2		-	-	-	-	-	-	-	-	-	-	-	-	-
6/1.2-1.5	F	7	<0.5	14	45	77		0.3	13	**230**	1		13.3		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	-
BD1/040209[5]	F	7	<0.5	13	18	52		0.2	11	22	0.7		9.3		-	-	-	-	-	-	-	-	-	-	-	-	-
7/0.3-0.5	F	-	-	-	-			-	-	-	**30**		**430.5**		-	-	-	-	-	-	-	-	-	-	-	-	-
7/0.7-1.0	F	<4	<0.5	18	12	300	1.1	**1.6**	2	32	0.3		3.5		<25	<100	<0.5	<0.5	<1	<3	<2.0	<0.1	<0.1	<0.1	<5	<0.5	NAD
7A/1.7-2.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
8/0.3-0.5	F	-	-	-	-			-	-	-	**14**		**123.2**		-	-	-	-	-	-	-	-	-	-	-	-	-
8/0.7-1.0	F	-	-	-	-			-	-	-	1.1		9		-	-	-	-	-	-	-	-	-	-	-	-	-
8/1.2-1.5	F	5	<0.5	13	**210**	95		0.7	9	180	0.5		4.5		-	-	-	-	-	-	-	-	-	-	-	-	NAD
8/2.7-3.0	F	5	<0.5	18	28	240	0.89	0.7	11	87	0.4		4.5		<25	<100	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	-
9/0.2-0.5	F	4	0.6	11	75	**1500**	1.70	0.3	9	**500**	**7.2**	<0.001	67.4	<0.002	<25	640	<0.5	<0.5	<1	<3	-	<0.1	0.4	0.8	<5	-	NAD
BDA/110209[5]	F	4	0.6	12	77	**720**		0.4	8	**460**	**10**		**116.8**		-	-	-	-	-	-	-	-	-	-	-	-	-
10/0.0-0.1	F	<4	<0.5	9	38	140		0.2	5	140	2.2		25.5		<25	350	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	NAD
11/0.2-0.5	F	<4	<0.5	15	65	150	0.15	0.4	15	140	**15**	<0.001	**128.3**	<0.002	<25	**2120**	<0.5	<0.5	<1	<3	-	<1	<0.1	<0.1	<5	-	NAD
BDB/110209[5]	F	<4	<0.5	13	68	160		0.5	16	140	**16**		**139.4**		-	-	-	-	-	-	-	-	-	-	-	-	-
BDB1/110209[5]	F	3	0.1	11	58	11	-	-	**137**	143	0.5		**149.3**		-	-	-	-	-	-	-	-	-	-	-	-	-
12/0.0-0.1	F	<4	<0.5	5	10	18		<0.1	4	39	0.1		1.2		<25	<100	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	NAD
12/0.3-0.5	F	-	-	-	-			-	-	-	**13**		**164.7**		-	-	-	-	-	-	-	-	-	-	-	-	-
12/1.2-1.5	F	-	-	-	-			-	-	-	0.9		10.4		-	-	-	-	-	-	-	-	-	-	-	-	-
13/0.3-0.5	F	-	-	-	-			-	-	-	2.7		36.5		-	-	-	-	-	-	-	-	-	-	-	-	-
13/1.2-1.5	F	-	-	-	-			-	-	-	0.4		3.7		-	-	-	-	-	-	-	-	-	-	-	-	-
13/3.7-4.0	N	<4	<0.5	32	4	16		<0.1	2	2	<0.05		<0.2		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
16/0.2-0.5	F	<4	<0.5	11	47	150	0.1	**1.1**	8	150	**16**	<0.001	**165.7**	0.002	<25	920	<0.5	<0.5	<1	<3	-	<1	<0.1	<0.1	<5	<0.5	NAD
16/0.7-1.0	F	-	-	-	-			-	-	-	1.1		10.1		-	-	-	-	-	-	-	-	-	-	-	-	-
16/1.7-2.0	F	-	-	-	-			-	-	-	**6**		55.8		-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank	-	-	-	-	-	-		-	-	-	-		-		-	-	<0.5	<0.5	<1	<3	-	-	-	-	-	-	-
Trip Spike[8]	-	-	-	-	-	-		-	-	-	-		-		-	-	103	110	104	107/106	-	-	-	-	-	-	-
95% UCL		-	-	-		397.2	-				-	-	-	-	-	836.9	3.0	-	-	-	-	-	-		-		-
Site Assessment Criteria																											
SAC: Residential with gardens and accessible soil (HIL - Column 1)	**Applicable to Area of Proposed Childcare Centre**	**100**	**20**	**100**	**1000**	**300**	**N/A**	**15**	**600**	**7000**	**1**	**N/A**	**20**	**N/A**	**65**	**1000**	**1**	**1.4**	**3.1**	**14**	**Refer to Table 3**	**10**	**10/50/200/10**	**N/A**	**8500**	**500**	**No Asbestos on ground surface[9]**
SAC: Residential with minimal access to soil (HIL - Column 2)	**Applicable to Remaining Site Area**	**400**	**80**	**48000**	**4000**	**1200**	**N/A**	**60**	**2400**	**28000**	**4**	**N/A**	**80**	**N/A**								**40**	**40/200/800/40**	**N/A**	**34000**	**2000**	

SAC: Provisional phytotoxicity-based investigation levels for sandy loams (HIL - Column 5)	Applicable to Proposed Landscape Area	20	3	400	100	600	N/A	1	60	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Classification Threshold Criteria (without TCLP) [2]																											
General Solid Waste (CT1)		100	20	100	N/A	100	N/A	4	40	N/A	N/A	N/A	0.8	N/A	N/A	N/A	10	288	600	1000	N/A	N/A	N/A	4	N/A	320	N/A
Restricted Solid Waste (CT2)		400	80	400	N/A	400	N/A	16	160	N/A	N/A	N/A	3.2	N/A	N/A	N/A	40	1152	2400	4000	N/A	N/A	N/A	15	N/A	1280	N/A
Waste Classification Threshold Criteria (with TCLP) [2]																											
General Solid Waste (CT1)		500	100	1900	N/A	1500	5	50	1050	N/A	10	0.04	200	N/A	650	10000	18	518	1080	1800	N/A	<50	<50	7.5	N/A	16	N/A
Restricted Solid Waste (CT2)		2000	400	7600	N/A	6000	20	200	4200	N/A	23	0.16	800	N/A	2600	40000	72	2073	4320	7200	N/A	<50	<50	30	N/A	64	N/A
VENM																											
Background ranges																											
NEPC		1-50	1	5-1000	2-100	2-100	N/A	0.03	5-500	10-300	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-
Health-based (HIL) and provisional phytotoxicity-based (PPIL) investigation levels																											
HIL		100	20	12000	1000	300	N/A	15	600	7000	20	N/A	1	N/A	65 [3]	1000 [3]	1 [3]	1.4 [3]	3.1 [3]	14 [3]	-	-	-	-	-	-	-
PPIL		20	3	400	100	600	N/A	1	60	200	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1	All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable in normal environmental conditions
2	NSW DECC *Waste Classification Guidelines* (Table 2) [April 2008]
3	NSW EPA Contaminated Sites *Guidelines for Assessing Service Station Sites* (1994) threshold concentrations for sensitive land use-soils
4	benzo(a)pyrene
5	field replicate sample of sample listed directly above
6	In the order Aldrin + dieldrin, Chlordane, DDT +DDD + DDE, Heptachlor
7	TCLP in mg/L
8	Reported as % Recovery
9	No asbestos present on the ground surface (Correspondence from NSW EPA Director of Contaminated Sites to Accredited Site Auditors)
NEPC	NEPC (1999). National Environmental Protection (Assessment of Site Contamination) Measure *Schedule B(1) Guidelines on the Investigation Levels for Soil and Groundwater, Background Ranges*
HIL/PPIL	NSW EPA Contaminated Sites *Guidelines for the NSW Site Auditor Scheme* (2nd Edition) (2006) Soil Investigation Levels for Urban Redevelopment Sites in NSW Heath-based investigation levels for residential with gardens (HIL Column 1) and Provisional Phytotoxicity Based Investigation Levels (PPIL)
NAD	No asbestos detected at reporting limit of 0.1g/kg
Bold	exceeds criteria
Bold	Denotes hotspot (exceeds 2.5 times SAC)
N/A	Not applicable
-	not analysed

Table 10.1 - Results of Soil Analysis for Waste Classification
(All results in mg/kg unless otherwise stated)

Sample ID	Natural / Filling	Heavy Metals									PAH				TPH		Benzene	Toluene	Ethylbenzene	Total Xylene	VOCs	PCB	OCP[6]	OPP	Total Phenols	Cyanide	Asbestos
		As	Cd	Cr[1]	Cu	Total Pb	TCLP Pb[7]	Hg	Ni	Zn	Total B(a)P[4]	TCLP B(a)P[4,7]	Total +ve PAH	TCLP +ve PAH[7]	C6-C9	C10-C36											
Area of the Proposed Childcare Centre																											
3/0.3-0.5	F	9	<0.5	11	60	290	0.09	2.6	11	84	2.2	<0.001	30.9	<0.002	<25	130	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
3/0.7-1.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
3/1.2-1.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
3/1.7-2.0	F	<4	<0.5	15	3	19		<0.1	3	2	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
4/0.3-0.5	F	<4	<0.5	7	32	100	0.08	0.8	5	89	0.7	<0.001	7.7	<0.002	<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
4/1.2-1.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
4/1.7-2.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
14/0.3-0.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
14/1.2-1.5	F	-	-	-	-			-	-	-	0.07		0.27		-	-	-	-	-	-	-	-	-	-	-	-	-
14/2.2-2.5	F	<4	<0.5	5	3	14		<0.1	<1	15	0.05		0.75		<25	<100	<0.5	<0.5	<1	<3	<2.0	-	-	-	-	-	NAD
15/0.3-0.5	F	<4	<0.5	8	6	29		0.1	2.0	11	<0.05		<0.2		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
15/0.7-1.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
15/2.2-2.5	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
Remaining Site Area																											
1/0-0.5	F	<4	<0.5	14	26	88		<0.1	8	100	**21**	<0.001	238.5	0.001	<25	1360	<0.5	<0.5	<1	<3	-	<1	<0.1	<0.1	<5	<0.5	NAD
1/0.7-1.0	F	-	-	-	-			-	-	-	7.8		74.3		-	-	-	-	-	-	-	-	-	-	-	-	-
2/0.3-0.5	F	-	-	-	-			-	-	-	2.9		30.1		-	-	-	-	-	-	-	-	-	-	-	-	-
2/0.7-1.0	F	<4	<0.5	3	5	25		<0.1	2	5	0.2		1.8		-	-	-	-	-	-	<2.0	<0.1	<0.1	<0.1	<5	<0.5	NAD
2/1.7-2.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
2/3.2-3.5	N	<4	<0.5	19	2	10		<0.1	1	22	<0.05		<0.2		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	-
5/0.3-0.5	F	<4	<0.5	7	18	50		<0.1	4	44	0.8		8.3		<25	<100	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	NAD
5/1.2-1.5	F	-	-	-	-			-	-	-	0.06		0.26		-	-	-	-	-	-	-	-	-	-	-	-	-
6/0.0-0.1	F	<4	<0.5	10	16	49		<0.1	6	53	0.7		6.5		-	-	-	-	-	-	-	-	-	-	-	-	NAD
6/0.3-0.5	F	-	-	-	-			-	-	-	**36**	<0.001	50.77	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-
6/0.7-1.0	F	-	-	-	-			-	-	-	0.7		8.2		-	-	-	-	-	-	-	-	-	-	-	-	-
6/1.2-1.5	F	7	<0.5	14	45	77		0.3	13	230	1		13.3		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	-
BD1/040209[5]	F	7	<0.5	13	18	52		0.2	11	22	0.7		9.3		-	-	-	-	-	-	-	-	-	-	-	-	-
7/0.3-0.5	F	-	-	-	-			-	-	-	**30**		430.5		-	-	-	-	-	-	-	-	-	-	-	-	-
7/0.7-1.0	F	<4	<0.5	18	12	300	1.1	1.6	2	32	0.3		3.5		<25	<100	<0.5	<0.5	<1	<3	<2.0	<0.1	<0.1	<0.1	<5	<0.5	NAD
7A/1.7-2.0	F	-	-	-	-			-	-	-	<0.05		<0.2		-	-	-	-	-	-	-	-	-	-	-	-	-
8/0.3-0.5	F	-	-	-	-			-	-	-	**14**		123.2		-	-	-	-	-	-	-	-	-	-	-	-	-
8/0.7-1.0	F	-	-	-	-			-	-	-	1.1		9		-	-	-	-	-	-	-	-	-	-	-	-	-
8/1.2-1.5	F	5	<0.5	13	210	95		0.7	9	180	0.5		4.5		-	-	-	-	-	-	-	-	-	-	-	-	NAD
8/2.7-3.0	F	5	<0.5	18	28	240	0.89	0.7	11	87	0.4		4.5		<25	<100	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	-
9/0.2-0.5	F	4	0.6	11	75	1500	1.70	0.3	9	500	7.2	<0.001	67.4	<0.002	<25	640	<0.5	<0.5	<1	<3	-	<0.1	0.4	0.8	<5	-	NAD
BDA/110209[5]	F	4	0.6	12	77	720		0.4	8	460	10		116.8		-	-	-	-	-	-	-	-	-	-	-	-	-
10/0.0-0.1	F	<4	<0.5	9	38	140		0.2	5	140	2.2		25.5		<25	350	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	NAD
11/0.2-0.5	F	<4	<0.5	15	65	150	0.15	0.4	15	140	**15**	<0.001	128.3	<0.002	<25	2120	<0.5	<0.5	<1	<3	-	<1	<0.1	<0.1	<5	-	NAD
BDB/110209[5]	F	<4	<0.5	13	68	160		0.5	16	140	16		139.4		-	-	-	-	-	-	-	-	-	-	-	-	-
BDB1/110209[5]	F	3	0.1	11	58	11	-	-	137	143	0.5		149.3		-	-	-	-	-	-	-	-	-	-	-	-	-
12/0.0-0.1	F	<4	<0.5	5	10	18		<0.1	4	39	0.1		1.2		<25	<100	<0.5	<0.5	<1	<3	-	<0.1	<0.1	<0.1	<5	<0.5	NAD
12/0.3-0.5	F	-	-	-	-			-	-	-	**13**		164.7		-	-	-	-	-	-	-	-	-	-	-	-	-
12/1.2-1.5	F	-	-	-	-			-	-	-	0.9		10.4		-	-	-	-	-	-	-	-	-	-	-	-	-
13/0.3-0.5	F	-	-	-	-			-	-	-	2.7		36.5		-	-	-	-	-	-	-	-	-	-	-	-	-
13/1.2-1.5	F	-	-	-	-			-	-	-	0.4		3.7		-	-	-	-	-	-	-	-	-	-	-	-	-
13/3.7-4.0	N	<4	<0.5	32	4	16		<0.1	2	2	<0.05		<0.2		<25	<100	<0.5	<0.5	<1	<3	-	-	-	-	-	-	NAD
16/0.2-0.5	F	<4	<0.5	11	47	150	0.1	1.1	8.0	150	**16**	<0.001	165.7	0.002	<25	920	<0.5	<0.5	<1	<3	-	<1	<0.1	<0.1	<5	<0.5	NAD
16/0.7-1.0	F	-	-	-	-			-	-	-	1.1		10.1		-	-	-	-	-	-	-	-	-	-	-	-	-
16/1.7-2.0	F	-	-	-	-			-	-	-	6		55.8		-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank	-	-	-	-	-	-		-	-	-	-		-		-	-	<0.5	<0.5	<1	<3	-	-	-	-	-	-	-
Trip Spike[8]	-	-	-	-	-	-		-	-	-	-		-		-	-	103	110	104	107/106	-	-	-	-	-	-	-
Waste Classification Threshold Criteria (without TCLP)[2]																											
General Solid Waste (CT1)		100	20	100	N/A	100	N/A	4	40	N/A	N/A	N/A	0.8	N/A	N/A	N/A	10	288	600	1000	N/A	N/A	N/A	4	N/A	320	N/A
Restricted Solid Waste (CT2)		400	80	400	N/A	400	N/A	16	160	N/A	N/A	N/A	3.2	N/A	N/A	N/A	40	1152	2400	4000	N/A	N/A	N/A	15	N/A	1280	N/A
Waste Classification Threshold Criteria (with TCLP)[2]																											
General Solid Waste (CT1)		500	100	1900	N/A	1500	5	50	1050	N/A	10	0.04	200	N/A	650	10000	18	518	1080	1800	N/A	<50	<50	7.5	N/A	16	N/A
Restricted Solid Waste (CT2)		2000	400	7600	N/A	6000	20	200	4200	N/A	23	0.16	800	N/A	2600	40000	72	2073	4320	7200	N/A	<50	<50	30	N/A	64	N/A

Sample ID	Natural / Filling	Heavy Metals									PAH				TPH		Benzene	Toluene	Ethylbenzene	Total Xylene	VOCs	PCB	OCP[6]	OPP	Total Phenols	Cyanide	Asbestos
		As	Cd	Cr[1]	Cu	Total Pb	TCLP Pb[7]	Hg	Ni	Zn	Total B(a)P[4]	TCLP B(a)P[4,7]	Total +ve PAH	TCLP +ve PAH[7]	C6-C9	C10-C36											
VENM																											
Background ranges																											
NEPC	1-50	1	5-1000	2-100	2-100	N/A	0.03	5-500	10-300	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Health-based (HIL) and provisional phytotoxicity-based (PPIL) investigation levels																											
HIL	100	20	12000	1000	300	N/A	15	600	7000	20	N/A	1	N/A	65[3]	1000[3]	1[3]	1.4[3]	3.1[3]	14[3]	-	-	-	-	-	-	-	-
PPIL	20	3	400	100	600	N/A	1	60	200	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1	All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable in normal environmental conditions
2	NSW DECC *Waste Classification Guidelines* (Table 2) [April 2008]
4	benzo(a)pyrene
5	field replicate sample of sample listed directly above
6	In the order Aldrin + dieldrin, Chlordane, DDT +DDD + DDE, Heptachlor
7	TCLP in mg/L
8	Reported as % Recovery
9	No asbestos present on the ground surface (Correspondence from NSW EPA Director of Contaminated Sites to Accredited Site Auditors)
NEPC	NEPC (1999). National Environmental Protection (Assessment of Site Contamination) Measure *Schedule B(1) Guidelines on the Investigation Levels for Soil and Groundwater, Background Ranges*
HIL/PPIL	NSW EPA Contaminated Sites *Guidelines for the NSW Site Auditor Scheme* (2nd Edition) (2006) Soil Investigation Levels for Urban Redevelopment Sites in NSW Heath-based investigation levels for residential with gardens (HIL Column 1) and Provisional Phytotoxicity Based Investigation Levels (PPIL)
NAD	No asbestos detected at reporting limit of 0.1g/kg
	exceeds CT1 threshold level (without TCLP)
	exceeds CT2 threshold level (without TCLP)
BOLD	exceeds CT1 threshold level (with TCLP)
BOLD	exceeds CT2 threshold level (with TCLP)
	exceeds CT2 threshold level (with TCLP)
N/A	Not applicable
-	not analysed

Table 11 - Results of Groundwater Analysis
(All results in µg/L unless otherwise stated)

Sample ID	Heavy Metals (Filtered)								PAH[2]		TPH		Benzene	Toluene	Ethylbenzene	Total Xylene	VOCs	OCP/OPP	PCB	Total Phenols	Hardness (mgCaCO$_3$/L)
	As	Cd	Cr[1]	Cu	Pb	Hg	Ni	Zn	B(a) P	Total +ve PAH	C6-C9	C10-C36									
GW1/120209	<1	<0.1	<1	2.4	<1	<0.5	11.0	18	<1	<2	<10	200	<1.0	<1.0	<1.0	<2.0	<10	<0.2	<2	<0.05	130
GW4/120209	2.1	<0.1	<1	<1	<1	<0.5	<1	15	<1	<2	<10	163	<1.0	<1.0	<1.0	<2.0	<10	<0.2	<2	<0.05	120
GW7/100209	<1	<0.1	<1	<1	<1	<0.5	1.6	13	<1	<2	<10	<100	<1.0	<1.0	<1.0	<2.0	<10	<0.2	<2	<0.05	110
GW8/100209	<1	0.2	<1	<1	<1	<0.5	1	21	<1	<2	<10	<100	<1.0	<1.0	<1.0	<2.0	<10	<0.2	<2	<0.05	430
BD1/100209[3]	<1	<0.1	<1	<1	<1	<0.5	1	11	<1	<2	<10	<100	<1.0	<1.0	<1.0	<2.0	<10	<0.2	<2	<0.05	430
GIL for GW1, 4 and 7 / 100209 (moderate to hard hardness)	13	0.54	2.5	3.5	13.6	0.6	27.5	20	0.2	16/2.0	150	600	950	300	140	350	Refer to Table 5	0.08/0.01/0.2/0.02/0.09[5]	0.6/0.030[6]	320	ND
GIL for GW8/100209 (extreme hardness)		2.0	8.4	12.6	90.8		99	72													

Notes:

1	All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) is too reactive and unstable under the normal environment
2	where results less than practical quantitative limit (PQL), quoted as less than PQL for most individual compounds
3	field replicate sample of sample listed directly above
4	refer to Tables 4 and 5 for GIL rationale and source
5	In the order Chlordane, DDT, Endosulfan, Endrin, Heptachlor
6	In the order Aroclor 1242, Aroclor 1254
-	not analysed/ not applicable
ND	not defined
BOLD	Exceeds GIL

9.5 Acid Sulphate Soil Testing Results

The results of ASS tests are summarised below in Tables 12 and 13. Detailed laboratory reports are included in Appendix D.

Table 12 – Results of DP Laboratory pH Screening

Sample ID	$pH_{(f)}$	$pH_{(Ox)}$		$pH_{(f)} - pH_{(ox)}$	Strength of reaction*
	0 hr	1 hr	2 hr		
1/0.05-0.1	8.61	7.71	7.71	0.90	1
1/0.7-1.0	7.66	7.29	7.21	0.45	1
1/1.7-2.0	8.01	6.59	6.36	1.65	1
1/2.7-3.0	5.26	4.43	4.32	0.94	1
8/0.0-0.1	5.47	4.07	4.04	1.43	2
8/0.7-1.0	5.98	6.44	6.61	-0.63	2
8/1.7-2.0	6.05	6.67	6.62	-0.57	1
8/2.7-3.0	6.11	6.21	6.32	-0.21	4F
13/0.3-0.5	7.15	6.77	6.90	0.25	2/3
13/1.2-1.5	7.06	6.05	6.04	1.02	2
13/1.7-2.0#	7.26	2.96	3.01	4.25	3
14/0.0-0.1	7.30	6.20	6.45	0.85	1
14/0.7-1.0	6.84	3.34	3.38	3.46	2
14/1.7-2.0	7.01	4.47	4.41	2.60	1
14/2.7-3.0	7.11	5.05	4.99	2.12	1
14/3.2-3.5	7.11	4.03	4.00	3.11	1

Notes:

* Strength of reaction key:
1 Denotes no or slight effervescence
2 Denotes moderate effervescence
3 Denotes vigorous effervescence
4 Denotes very vigorous effervescence, gas evolution and heat
F after reaction number indicates a bubbly/frothy reaction
BOLD Selected for SPOCAS testing
\# Sample having the most substantial pH drop.

pH_f non-oxidised pH (taken in field)
pH(Ox) oxidised pH

Table 13 - Results of Laboratory Analysis for SPOCAS

Sample location and depth	S_{CR} (%)	S_{POS} (%)	S_{KCL} (%)	S_P (%)	pH_{KCl}	pH_{ox}	TAA (Mol H+/ tonne)	TPA (Mol H+/ tonne)	TSA (Mol H+/ tonne)
13/1.7-2.0	0.032	0.056	0.007	0.063	6.1	5.8	<5	<5	<5
14/3.2-3.5	-	0.008	<0.005	0.009	4.8	4.0	10	7.5	<5
Action Criteria^ (more than 1000 tonnes disturbed)	0.03	0.03	-	-	4	3.5	-	18	18
Action Criteria^ (less than 1000 tonnes disturbed)	0.1	0.1	-	-	4	3.5	-	36	62
14/0.7-1.0	-	0.011	0.005	0.016	4.5	4.5	27	<5	<5
14/1.7-2.0	-	0.030	<0.005	0.034	5.8	4.4	5	<5	<5
Action Criteria* (more than 1000 tonnes disturbed)	0.03	0.03	-	-	4	3.5	-	18	18
Action Criteria* (less than 1000 tonnes disturbed)	0.06	0.06	-	-	4	3.5	-	36	36

Notes:

pH_{KCl} Non-oxidised pH (taken in laboratory)
pH_{ox} Oxidised pH
S_P Peroxide sulphur (after peroxide digestion)
S_{POS} Peroxide oxidisable sulphur (S_P – S_{KCl})
S_{KCL} Extractable sulphur
S_{CR} Chromium Reducible Sulphur
TAA Total Actual Acidity
TPA Total Potential Acidity
TSA Total Sulphidic Acidity (TPA-TAA)
^ Action Criteria based on 'Fine Texture', medium to heavy clays and silty clays
* Action Criteria based on 'Medium Texture', sandy loams to light clays

The findings based on the analytical results presented in Tables 12 and 13 are as follows:-

- The dark grey clay filling in Bore 13 (13/1.7-2.0), the brown sandy clay filling in Bore 14 (14/0.7-1.0), the brown clayey sand in Bore 14 (14/1.7-2.0) and the grey clay in Bore 14 (14/3.2-3.5) were submitted for SPOCAS testing as these samples registered either a relatively low oxidized pH or very vigorous reactions respectively.
- With respect to the 'Acid Trail' criteria, all sample results did not exceed the TPA and TSA action criteria.
- With respect to the 'Sulphur Trail' criteria, Peroxide Oxidisable Sulphur (S_{POS}) levels for all samples were within the Action Criteria with the exception of sample 13/1.7-2.0 (0.056%), exceeding the 'Fine Texture' S_{POS} Action Criteria of 0.03% for more than 1000 tonnes disturbed.
- To further determine if the clay filling is PASS (Potential ASS), sample 13/1.7-2.0 was analysed for chromium reducible sulphur to determine if the sulphur detected in SPOS results was due to organic sulphur. The result (0.032%) was lower than the initial SPOCAS value (0.056%) but still marginally exceeded the action criteria of 0.03%, indicating a slight potential for the presence of ASS in the grey clay filling.

In general, the above preliminary results generally indicated a low potential for the presence of ASS in the soils analysed, which is in agreement with the risk map classification (refer to Drawing 2, Appendix A) indicating that no known ASS occurrences were previously recorded in the area. However, due to the slightly elevated S_{POS} value and hence the potential presence of ASS in sample 13/1.7-2.0, it is recommended that further ASS analysis should be conducted during the additional *ex situ* waste classification assessment of the stockpiled material, in order to verify the validity of the SPOCAS results.

10. ASSESSMENT OF LABORATORY RESULTS

10.1 Soil Results

Soil samples were assessed for the identified potential contaminants of concern, viz: heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), BTEX, TPH, VOCs, PAH, OCP, OPP, PCB, cyanide and phenols. Asbestos was also analysed in fill soils.

The laboratory results (Table 10) indicate that contaminant concentrations in the soil samples analysed were within the SAC with the following exceptions:

Area of the Proposed Childcare Centre:

- Sample 3/0.3-0.5: 2 exceedances:
    1. B(a)P [2.2 mg/kg compared to the SAC of 1 mg/kg]; and
    2. Total PAH [30.9 mg/kg compared to the SAC of 20 mg/kg].

Remaining Site Area:

- Sample 1/0.0-0.5: 3 exceedances:
    1. B(a)P [21 mg/kg compared to the SAC of 4 mg/kg];
    2. Total PAH [238.5 mg/kg compared to the SAC of 80 mg/kg; and
    3. TPH (C_{10}-C_{36}) [1360 mg/kg compared to the SAC of 1000 mg/kg].
- Sample 1/0.7-1.0: 1 exceedance:
    1. B(a)P [7.8 mg/kg compared to the SAC of 4 mg/kg].
- Sample 6/0.3-0.5: 1 exceedance:
    1. B(a)P [36 mg/kg compared to the SAC of 4 mg/kg].
- Sample 7/0.3-0.5: 2 exceedances:
    1. B(a)P [30 mg/kg compared to the SAC of 4 mg/kg]; and
    2. Total PAH [430.5 mg/kg compared to the SAC of 80 mg/kg].
- Sample 8/0.3-0.5: 2 exceedances:
    1. B(a)P [14 mg/kg compared to the SAC of 4 mg/kg]; and
    2. Total PAH [123.2 mg/kg compared to the SAC of 80 mg/kg].

- Sample 9/0.2-0.5: 2 exceedances:
    1. Lead [1500 mg/kg compared to the SAC of 1200 mg/kg]; and
    2. B(a)P [7.2 mg/kg compared to the SAC of 4 mg/kg].
- Sample 11/0.2-0.5: 3 exceedances:
    1. B(a)P [15 mg/kg compared to the SAC of 4 mg/kg];
    2. Total PAH [128.3 mg/kg compared to the SAC of 80 mg/kg]; and
    3. TPH (C_{10}-C_{36}) [2120 mg/kg compared to the SAC of 1000 mg/kg].
- Sample 12/0.3-0.5: 2 exceedances:
    1. B(a)P [13 mg/kg compared to the SAC of 4 mg/kg]; and
    2. Total PAH [164.7 mg/kg compared to the SAC of 80 mg/kg].
- Sample 16/0.2-0.5: 2 exceedances:
    1. B(a)P [16 mg/kg compared to the SAC of 4 mg/kg]; and
    2. Total PAH [165.7 mg/kg compared to the SAC of 20 mg/kg].
- Sample 16/1.7-2.0: 1 exceedance:
    1. B(a)P [6 mg/kg compared to the SAC of 4 mg/kg].

Elevated levels of TPH (C_{10}-C_{36}) were noted in two near surface samples from Bores 1 and 11. The 95% upper confidence limit (UCL) was calculated for TPH (C_{10}-C_{36}) using *PRO UCL Version 4* (downloaded from the US EPA website). The 95% UCL for TPH (C_{10}-C_{36}) was within the SAC. Thus the TPH (C_{10}-C_{36}) exceedances are not considered significant.

Sample 9/0.2-0.5 collected from the surfical filling had lead concentrations of 1,500 mg/kg, which exceeded the SAC (1,200 mg/kg). The recorded exceedances were noted to be statistically insignificant as the calculated 95% Upper Confidence Limit (397.2 mg/kg) for the average contaminant concentration was within adopted SAC.

Overall, it should be noted that elevated concentrations of total PAH and/or benzo(a)pyrene were detected in eleven samples collected from the surficial filling (between 0.2 - 2.0 m) of Bores 1, 3, 6, 7, 8, 9, 11, 12, 16. Total PAH and/or benzo(a)pyrene concentrations in seven of the eleven samples were at ‘hotspot’ concentrations, i.e. the detected PAH level was more than 250% of the SAC. Similarly, elevated levels of PAH were also found during previous investigations undertaken by Coffey (ref no. S9979/1-AB and S9979/3-AB).

In general, deeper samples were also found to contain total PAH and/or benzo(a)pyrene but were at comparatively reduced concentrations, with most results within the SAC (except samples 1/0.7-1.0 and 16/1.7-2.0, both of which were collected from the filling horizon..

The elevated/hotspot concentrations of total PAH and/or benzo(a)pyrene are likely to be associated with the nature of the filling material. In particular, ash and/or slag was positively identified in the filling material in samples 3/0.3-0.5, 6/0.3-0.5, 9/0.2-0.5 and 11/0.2-0.5. Ash and slag is possibly derived from past industrial land-uses (i.e. the distillery and refinery) of the site, which could have contributed to the elevated levels of total PAH and/or benzo(a)pyrene. Given the uncontrolled nature of the filling, it is likely that ash and/or slag are sporadically present in the general filling.

Exceedances of PPILs for copper, lead, mercury, nickel and zinc were detected in several samples collected from the surficial filling. The detected levels are not uncommon in urbanised areas, and the detected heavy metal levels were within the typical background ranges of these metals.

BTEX, volatile TPH (C_6-C_9), OCP/OPP, PCB, VOCs, Cyanide and Phenols were not detected in all filling samples analysed. Asbestos was not detected in any of the samples analysed for asbestos. Having said this, it should be noted that test bores are not effective in the identification of asbestos in soils. As construction debris (brick, tile, gravel, glass and concrete fragments) were noted in all of the bores, there is a potential for asbestos to be present in the filling.

10.2 Groundwater Results

The groundwater samples were assessed for the identified potential contaminants of concern, viz: heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), BTEX, TPH, VOCs, PAH, OCP, OPP, PCB, cyanide and phenols.

The laboratory results (Table 11) indicate that contaminant concentrations in all the groundwater samples were within the adopted groundwater investigation levels.

10.3 Preliminary *in situ* Waste Classification

Filling material

Filling generally comprising clayey sand/sand/clay/silty sand/sandy clay material with gravel, brick, concrete, plastic and sandstone fragments was encountered in all test bores. Ash and slag inclusions were identified in the filling of Bores 3, 6, 10 and 11. Railway ballast was encountered in the filling of Bore 8. Classification using the six step process is presented in Table 14.

Table 14: Waste Classification of the filling material tested using the six step process

Step	Comments	Rationale
1. Is it special waste?	No	Waste is not considered to be Special Waste as a result of the observed clayey sand/sand/clay/silty sand/sandy clay material with gravel, brick, concrete, plastic, sandstone fragments, railway ballast, ash and slag. Having said this, as construction debris (brick, tile, gravel, glass and concrete fragments) were noted in all of the bores, there is a potential for asbestos to be present in the filling.
2. Is it liquid waste?	No	Waste composed of clayey sand/sand/clay/silty sand/sandy clay material with gravel, brick, concrete, plastic and sandstone fragments, railway ballast, ash and slag. (i.e. no liquids)
3. Is the waste "pre-classified"?	No	Material is not pre-classified.
4. Does the Waste have hazardous waste characteristics?	Laboratory Analysis conducted to confirm contaminant concentrations were within General / Restricted Solid Waste Criteria	Waste not observed to/ or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances or corrosive substances, waste not observed to contain coal tar, batteries or dangerous goods containers. However, laboratory analysis was carried out to verify the contaminant concentrations.
5. Chemical Assessment	Conducted	Refer to Table 10.1
6. Is the Waste Putrescible?	No	All observed components of the material comprised material pre-classified as non-putrescible (i.e. clayey sand / sand / clay / silty sand / sandy clay material with gravel, brick, concrete, plastic and sandstone fragments, railway ballast, ash and slag.

As shown in Table 10.1, elevated levels of lead, B(a)P and total PAH were detected in filling samples. However, TCLP analysis results indicated low levels of leachable lead, B(a)P and Total PAH in the filling material.

Based on the on-site observations, the high lead, B(a)P and total PAH concentrations detected in some of the samples were attributed to the presence of ash and/or slag in the filling material. Therefore, in accordance with the DECC *Waste Classification Guidelines, Part 2: Immobilisation of Waste*, April 2008 (General Approval of Immobilisation No 1999/07), the waste classification due to lead, B(a)P and Total PAH concentrations in ash and/or slag contaminated material can be classified according to their leachable concentration (TCLP) value alone.

Elevated levels of lead and/or PAHs (including B(a)P) were detected in filling samples 3/0.3-0.5, 6/0.3-0.5, 9/0.2-0.5 and 11/0.2-0.5, which contained ash and/or slag. However, TCLP analysis results indicated low levels of lead and/or leachable PAHs (including B(a)P) in the filling material. The low leachability of contaminants recorded is generally in agreement with the typical characteristics of ash and slag material.

Concentrations of BTEX, TPH, OCP/OPP, PCB, VOCs, Cyanide and Phenols in filling samples were not detected. Asbestos was also not detected in all selected filling samples.

Overall, based on the laboratory results, the filling encountered in the test bores is considered to be classifiable as GENERAL SOLID WASTE in accordance with the DECC *Waste Classification Guidelines*, April 2008, provided that the material is not cross-contaminated with other material. As construction debris (brick, tile, gravel, glass and concrete fragments) were noted in all of the bores, there is a potential for asbestos to be present in the filling. In this regard, it is prudent that special care should be adopted during excavation to check for the presence of asbestos in the filling. If potential asbestos containing materials are noted, then the affected filling materials should be demarcated and segregated from the general bulk of the filling for further verification testing by a qualified environmental consultant. The waste classification of the affected materials must be verified and the waste class reconfirmed before they can be disposed off-site.

The filling material was further evaluated to determine if the waste is putrescible or non-putrescible. On the basis that the filling material comprises general soil, without any observations of significant organic components, it is considered that the material is not capable of significant biological transformation and should be classified as GENERAL SOLID WASTE (NON-PUTRESCIBLE).

This is only a preliminary *in situ* waste classification. Due to the variability in the nature of the fill materials, and particularly the potential for asbestos, further *ex situ* waste classification of the filling is recommended. *Ex situ* waste classification should take place for any materials requiring disposal from the site. It is anticipated that such material will eventuate as a result of future remediation, service trenching and building construction. The excavated material should be assessed by a qualified Environmental Consultant to verify the preliminary *in situ* waste classification.

Natural material

The levels of potential contaminants detected in the two natural clay samples analysed were within the referenced guidelines or below the laboratory practical detection limits (Table 10.1). Due to the limited number of natural material samples selected for analysis, it is recommended that any natural materials proposed for removal from the site be examined upon excavation to evaluate its VENM status (if required).

It is noted that the above waste classification does not cover material on the site other than those specified above.

Appropriate prior arrangement with the receiving site/relevant authorities should be obtained prior to the disposal/reuse of any material off-site.

11. DISCUSSION AND SITE CHARACTERISATION

The subject site covers an area of approximately 6600 m^2 (0.66 ha). The site is generally flat with areas of bitumen paving and coarse grass. At the time of the investigation, the site was occupied by several heritage buildings (offices and student accommodation), a childcare centre, timber hall, car parking and landscaping.

Previous investigations conducted by Coffey indicated that the site has been used for industrial purposes from at least 1825 until 1878. Before the Blackfriars Campus was established, the site was occupied by a distillery which was later converted to a sugar refinery in 1952. The Coffey assessments also identified deep filling beneath the site, containing some elevated concentrations of Heavy Metals, Polycyclic Aromatic Hydrocarbons (PAH), and Total Petroleum Hydrocarbons (TPH). No significant groundwater contamination was reported.

The fieldwork for the assessment revealed the presence of fill materials to depths ranging from about 2.0 m in the western portion to about 4.8 m in the eastern portion, overlying soft to firm clay (alluvium) then sandstone bedrock. The bedrock was encountered at depths ranging from 3.8 m to 5.2 m depth. Groundwater was encountered in bores ranging in depths between 2.3 m and 3.8 m below existing ground level.

Given the proposed land uses (ie. student accommodation, childcare, and student facilities) the laboratory test results were assessed against the health based criteria for residential development with accessible soils (childcare centre), and the health based criteria for residential development with minimal soil access (remainder of site). In additional, provisional phytotoxicity-based investigation levels for sandy loams were applicable in the area of the proposed landscape. With regard to petroleum hydrocarbons, the NSW EPA *Contaminated Sites: Guidelines for Assessing Service Station Sites* (1994) threshold concentrations for sensitive land were adopted as the site assessment criteria (SAC).

The results of the soil analysis indicate that the majority of organic and inorganic contaminant concentrations in all sampled soils were within the adopted SAC. The exceptions were as follows:

- Concentrations of benzo(a)pyrene (ranging from 2.2 mg/kg to 36 mg/kg), exceeding the SAC, were detected in 13 out of 48 soil samples analysed;
- Concentrations of Total PAH (ranging from 31 mg/kg to 430 mg/kg), exceeding the SAC, were detected in 10 of the 48 soil samples analysed;
- Concentrations of TPH (C10-C36) of 1,360 mg/kg and 2,120 mg/kg, exceeding the SAC of 1,000 mg/kg, at Bore 1 and Bore 11;
- Sample 9/0.2-0.5 collected from the surfical filling had lead concentrations of 1,500 mg/kg, which exceeded the SAC (1,200 mg/kg); and
- Exceedances of PPILs for copper, lead, mercury, nickel and zinc were detected in several samples collected from the surficial filling.

No groundwater contamination issues were identified. In this light, no unacceptable signs of contamination migration were noted and the potential for environmental impacts due to the above-mentioned exceedances appears to be low.

In general, the preliminary results indicted a low potential for the presence of ASS in the soils analysed, which is in agreement with the risk map classification indicating that no known ASS occurrences were previously recorded in the area. However, due to the slightly elevated S_{POS} value and hence the potential presence of ASS in sample 13/1.7-2.0, it is recommended that further ASS analysis should be conducted during the additional *ex situ* waste classification assessment of the stockpiled material, in order to verify the validity of the SPOCAS results.

The filling encountered in the test bores is considered to be classifiable as GENERAL SOLID WASTE (NON-PUTRESCIBLE) in accordance with the DECC *Waste Classification Guidelines*, April 2008, provided that the material is not cross-contaminated with other material.

12. CONCLUSION AND RECOMMENDATIONS

Based on the results of this assessment, it is considered that the site can be rendered suitable for the proposed redevelopment, subject to the preparation and implementation of a remedial action plan (RAP). The objective of the RAP will be to remove and/or manage potential exposure routes to the underlying contaminated materials (fill). Given the sporadic nature of the contaminant (primarily PAH) distribution and the inherent difficulties in excavating deep fill (with heritage buildings), whilst noting the absence of groundwater impacts and the low potential for contaminant migration, a remediation method of "cap and contain" is considered the most appropriate method for the site. An Environmental Management Plan (EMP) will also be required for the long term management of the capping system, ensuring it's long term integrity and safety for any persons potentially exposed to the capped materials.

In order to confirm the preliminary waste classification provided herein, further *ex situ* waste classification of the filling is recommended, once materials are excavated for off-site disposal. Due to the slight potential for the presence of ASS recorded in sample 13/1.7-2.0, it is recommended that further ASS analysis be conducted during the additional *ex situ* waste classification assessment of stockpiled material.

13. LIMITATIONS OF THIS REPORT

The scope of the site assessment activities and consulting services undertaken by DP were limited to those detailed in Section 2 of this report and accepted by Hutchinson Builders via an email dated 27 January 2009.

DP's assessment is necessarily based upon the result of a limited site investigation and the restricted program of surface and subsurface sampling, screening and laboratory testing which was set out in the proposal. DP cannot provide unqualified warranties nor assumes any liability for site conditions not observed, or accessible, during the time of the investigations.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. In addition, site characteristics may change at any time in response to variations in natural conditions, chemical reactions and other events, e.g. groundwater movement and or spillages of contaminating substances. These changes may occur subsequent to DP's investigations and assessment.

This report, its associated documentation, and the information herein have been prepared solely for the use of Hutchinson Builders. Any reliance assumed by third parties on this report shall be at such parties' own risk. Any ensuing liability resulting from use of the report by third parties cannot be transferred to DP.

DOUGLAS PARTNERS PTY LTD

Reviewed by:

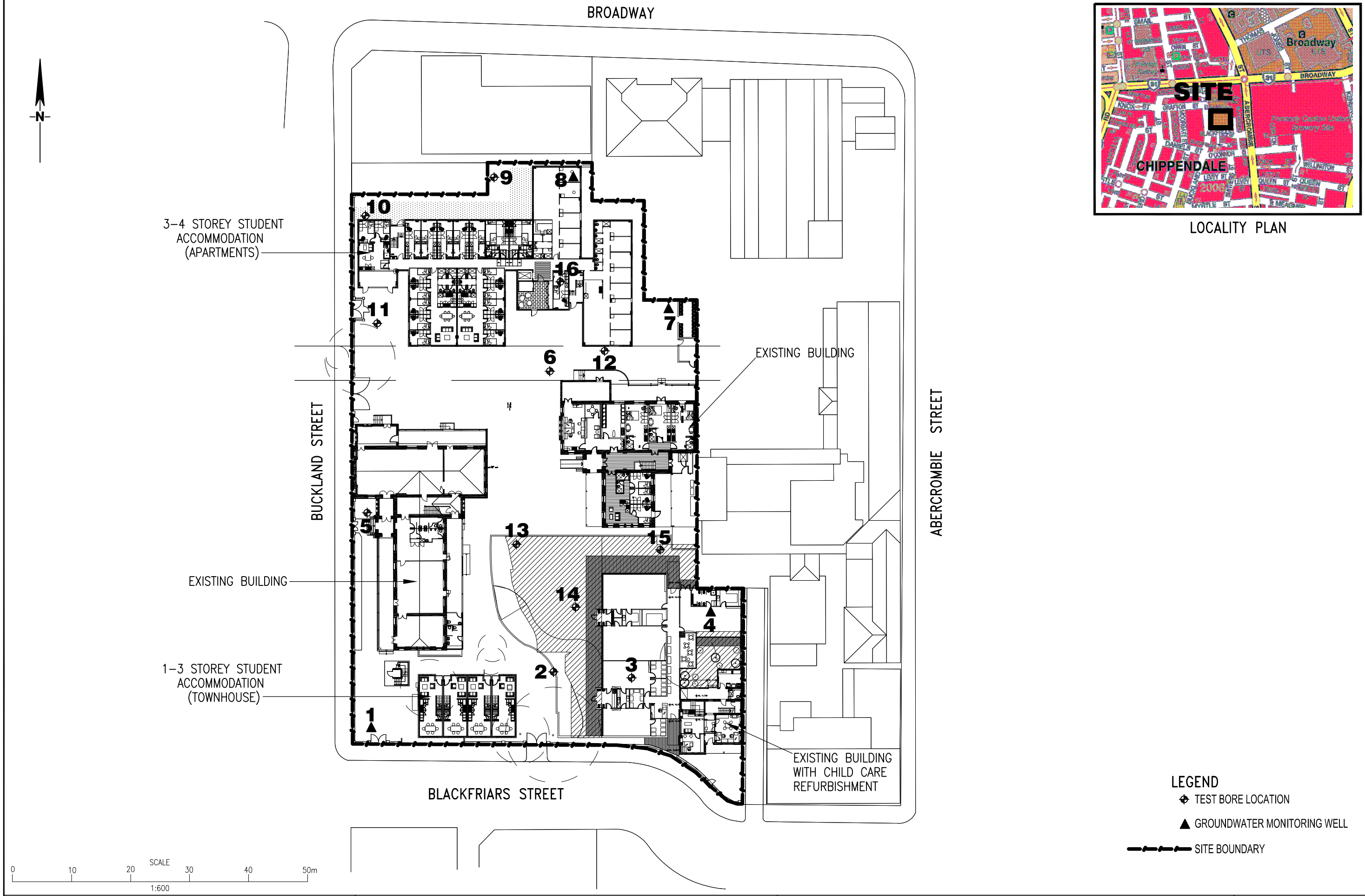
pp. Wen-Jei Yuan

Jessica Derrien
Environmental Scientist

Ronnie Tong
Principal

Paul Gorman
Senior Associate

APPENDIX A
Site Drawings and Photos



LOCALITY PLAN

LEGEND

- TEST BORE LOCATION
- GROUNDWATER MONITORING WELL
- SITE BOUNDARY

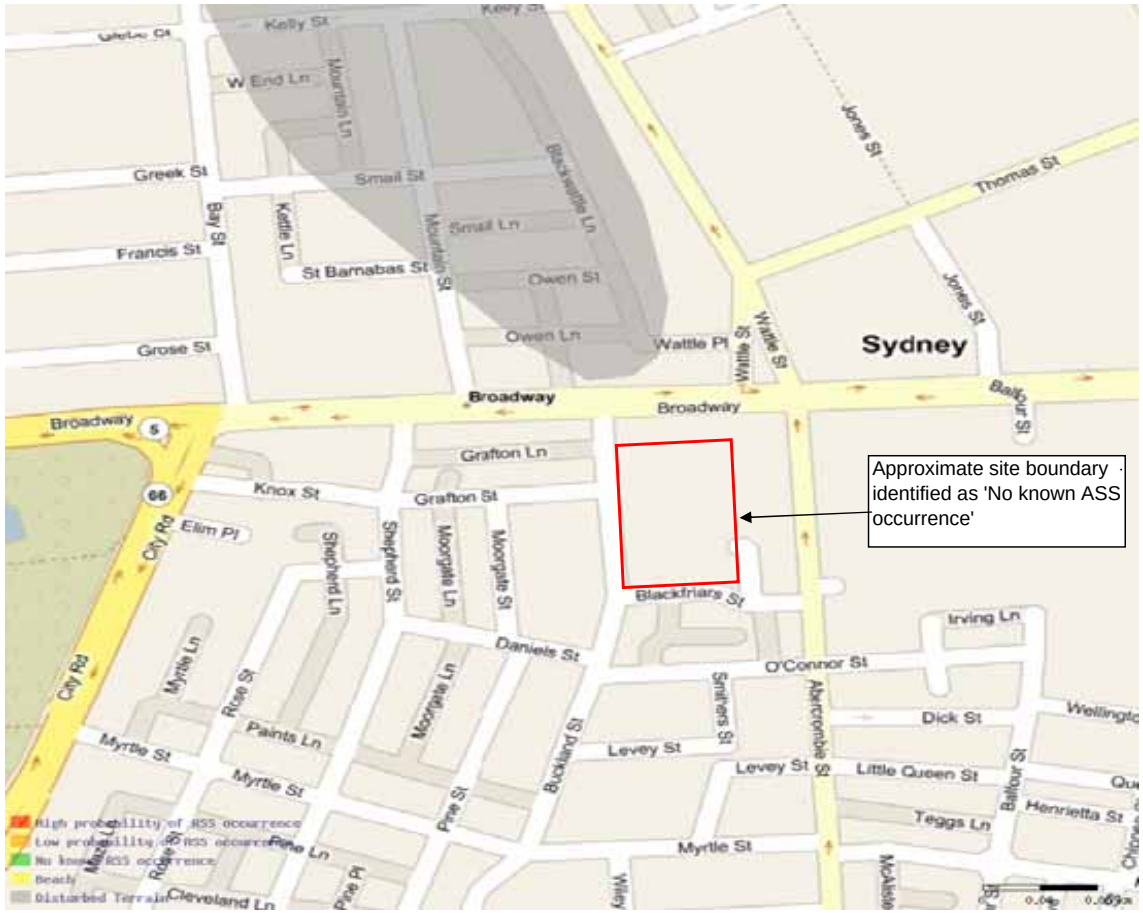
Douglas Partners
Geotechnics • Environment • Groundwater

CLIENT: Hutchinson Builders		
DRAWN BY: PSCH	SCALE: As shown	OFFICE: Sydney
APPROVED BY:		DATE: 3.3.2009

TITLE: **Location of Test Bores and Monitoring Wells**
Proposed Student Accomodation and Childcare Centre
Buckland Street, CHIPPENDALE

PROJECT No:	45996.01
DRAWING No:	1
REVISION:	A

P:\45996.01 CHIPPENDALE, UTS - Blackfriars & Buckland Sts - Environmental PGI\Drawings\45996.01-1.dwg, 3/4/2009 7:53:06 AM



Acid Sulphate Soil Risk Map 4-12 Buckland Street, Chippendale	**Project** **45996.01**	**March** **2009**	**Drawing** **2**

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Photo 1: General view of the site

Photo 2: General view of the existing child care centre

Phase 2 Contamination Assessment **4-12 Buckland Street, Chippendale**	**Project** **45996.01**	**March** **2009**	**Plate** **1**

Douglas Partners
Geotechnics · Environment · Groundwater

APPENDIX B
Site History Search

WorkCover
NEW SOUTH WALES

Our Ref: D09/010397
Your Ref: Jessica Derrien

12 February 2009

Attention: Ms Derrien
Douglas Partners Pty Ltd
PO Box 472
West Ryde NSW 1685

Dear Ms Derrien

RE SITE: Blackfriars Street, Ultimo NSW 2007

I refer to your site search request received by WorkCover NSW on 3rd February 2009, requesting information on licences to keep dangerous goods for the above site.

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above-mentioned premises.

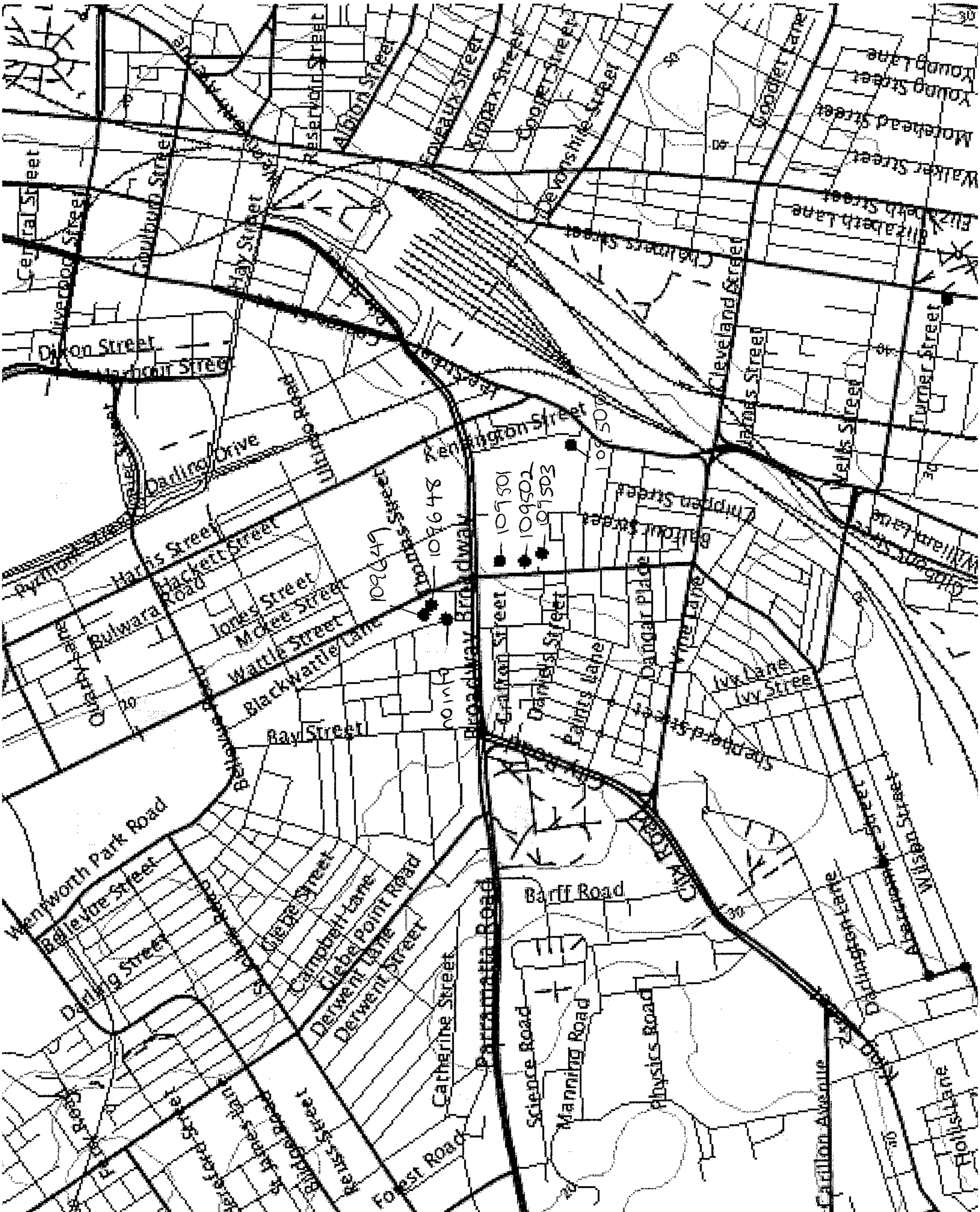
If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours sincerely

M.A Kidd

Michelle Kidd

Senior Licensing Officer
Dangerous Goods Team



Dixon Street
Harbour Street
Liverpool Street
Goulburn Street
Hay Street
Reservoir Street
Albion Street
Kippax Street
Cooper Street
Devonshire Street
Cooper Lane
Young Lane
Young Street
Morehead Street
Walker Street
Elizabeth Street
Elizabeth Lane
Chalmers Street
Cleveland Street
Wells Street
Turner Street
Darling Drive
Ultimo Road
Kensington Street
Chippen Street
Balfour Street
Pyrmont Street
Harris Street
Bulwara Road
Jones Street
Mckee Street
Wattle Street
Blackwattle Lane
Bay Street
Broadway
Daniels Street
Dangar Place
Ivy Lane
Ivy Street
Shepherd Street
City Road
Wentworth Park Road
Bellevue Street
Darling Street
Glebe Street
Campbell Lane
Glebe Point Road
Derwent Lane
Derwent Street
Catherine Street
Parramatta Road
Barff Road
Science Road
Manning Road
Physics Road
Forest Road
Carillon Avenue
Darlington Lane
Wilson Street
Hollis Lane
109649
109648
109501
109502
109503
109500
109650

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, February 10, 2009

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW109649

Works Details (top)

GROUNDWATER NUMBER	GW109649
LIC-NUM	10BL602485
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	
CONSTRUCTION-METHOD	Auger - Hollow Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2008-05-03
FINAL-DEPTH (metres)	7.20
DRILLED-DEPTH (metres)	7.20
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	WEST APARTMENTS PTY LTD
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	2.95
SALINITY	869.00
YIELD	1.00

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249352.00
EASTING	333320.00

LATITUDE	33 52' 59"
LONGITUDE	151 11' 52"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ST ANDREW
PORTION-LOT-DP	1//546296

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ST ANDREW
PORTION-LOT-DP	1 546296

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	7.20	100			Auger - Hollow Flight
1	1	Casing	PVC Class 18	0.00	1.10	61	51		Screwed; Seated on Bottom
1	1	Opening	Slots - Horizontal	1.10	7.20	61			PVC Class 18; Casing - Machine Slotted; SL: 42mm; A: .2mm; Screwed
1		Annulus	Waterworn/Rounded	1.00	7.20				Graded; GS: 3-5mm

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
3.20	6.20	3.00		2.95		1.00			

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	4.80	4.80	FILL,GREY,BROWN,GRAVEL,CLAY,SILT		
4.80	5.90	1.10	SILTY SAND,LT GREY,RED,MED COARSE GRAINED		
5.90	7.20	1.30	SANDSTONE RED BROWN,WEATHERED WITH CLAY BANDS		

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, February 10, 2009

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW109648

Works Details (top)

GROUNDWATER NUMBER	GW109648
LIC-NUM	10BL602485
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	
CONSTRUCTION-METHOD	Auger - Hollow Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2008-05-03
FINAL-DEPTH (metres)	6.20
DRILLED-DEPTH (metres)	6.20
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	WEST APARTMENTS PTY LTD
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	5.23
SALINITY	1302.00
YIELD	0.50

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249333.00
EASTING	333342.00

LATITUDE	33 52' 60"
LONGITUDE	151 11' 52"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ST ANDREW
PORTION-LOT-DP	1//546296

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ST ANDREW
PORTION-LOT-DP	1 546296

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	6.20	100			Auger - Hollow Flight
1	1	Casing	PVC Class 18	0.00	2.60	61	51		Screwed; Seated on Bottom
1	1	Opening	Slots - Horizontal	2.60	6.20	61			PVC Class 18; Casing - Machine Slotted; SL: 42mm; A: .2mm; Screwed
1		Annulus	Waterworn/Rounded	1.00	6.20				Graded; GS: 3-5mm

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
5.20	6.20	1.00		5.23		0.50			

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.90	2.90	FILL,BROWN/GREY,LOOSE GRAVEL,CONCRETE,SAND		
2.90	4.90	2.00	SILTY CLAY,LT GREY,MOTT.BROWN HIGH PLASTICITY		
4.90	5.80	0.90	SILTY SAND,LT GREY,MED COURSE GRAINED		
5.80	6.20	0.40	SANDSTONE,RED,BROWN,WEATHERED,CLAY BANDS		

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, February 10, 2009

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW109501

Works Details (top)

GROUNDWATER NUMBER	GW109501
LIC-NUM	10BL601554
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2007-03-01
FINAL-DEPTH (metres)	6.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	BROADWAY BREWERY
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	2.30
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249156.00
EASTING	333441.00

LATITUDE	33 53' 5"
LONGITUDE	151 11' 56"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	1//87874

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	1 76719

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, February 10, 2009

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW109502

Works Details (top)

GROUNDWATER NUMBER	GW109502
LIC-NUM	10BL601554
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2007-03-01
FINAL-DEPTH (metres)	6.40
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	BROADWAY BREWERY
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	2.18
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249090.00
EASTING	333442.00

LATITUDE	33 53' 7"
LONGITUDE	151 11' 56"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	1//630747

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	1 76719

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, February 10, 2009

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW109503

Works Details (top)

GROUNDWATER NUMBER	GW109503
LIC-NUM	10BL601554
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2007-03-01
FINAL-DEPTH (metres)	5.20
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	BROADWAY BREWERY
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	2.24
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249045.00
EASTING	333460.00

LATITUDE	33 53' 9"
LONGITUDE	151 11' 57"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	2//630747

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	1 76719

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, February 10, 2009

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW109500

Works Details (top)

GROUNDWATER NUMBER	GW109500
LIC-NUM	10BL601554
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Well
WORK-STATUS	
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2007-03-01
FINAL-DEPTH (metres)	4.80
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	BROADWAY BREWERY
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	2.30
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6248974.00
EASTING	333698.00

LATITUDE	33 53' 11"
LONGITUDE	151 12' 6"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	1//76719

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ALEXANDRIA
PORTION-LOT-DP	1 76719

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

APPENDIX C
Test Bore Reports and Notes Relating this Report

BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 1
PROJECT No: 45996.01
DATE: 06 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.04	ASPHALT		A	0.05				Gatic cover
		FILLING - brown clayey sand filling with sandstone, bricks, tiles and concrete		A	0.1 0.3 0.5		PID<5ppm		
	1			A	0.7 1.0				1
				A	1.2 1.5				Backfilled with gravel
	1.6	FILLING - yellow brown and grey, sand filling		A	1.7 2.0				2
	2.2	CLAY - green grey clay		A	2.2 2.5				
	3			A	2.7 3.0		PID<5ppm		3 Bentonite
				A	3.2 3.5				Backfilled with gravel
	3.9	SANDSTONE - yellow brown, low strength sandstone		A	3.9 4.5				4 Machine slotted PVC screen
	5	- medium strength sandstone at 5.3 to 5.9m							5
	5.9	Bore discontinued at 5.9m - target depth reached							End cap 6
	7								7
	8								8
	9								9

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** 3.5 to 5.9m

TYPE OF BORING: Solid flight auger to 3.5m; Rotary to 5.9m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS: Coring and rotary from 4.5 to 5.9m (to install piezometer)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 45996.01
DATE: 04 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.04	ASPHALT		A	0.04		PID<5ppm		
	0.4	FILLING - brown sand filling with gravel and brick fragments		A	0.3				
	0.6	FILLING - crushed sandstone and sand filling, with gravel and brick fragments			0.5				
	1.0	FILLING - grey and yellow brown, sand filling with some gravel		A	0.7				
		FILLING - yellow brown, clayey sand filling			1.0				
	1.6	FILLING - yellow brown and grey, clayey sand filling		A	1.2				
					1.5				
				A	1.7				
		- wet at 2.2m			2.0				
				A	2.2				
					2.5				
				A	2.7				
					3.0				
	3.2	CLAY - grey mottled orange brown clay		A	3.2				
	3.5	Bore discontinued at 3.5m - target depth reached			3.5				

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 3.5m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 3
PROJECT No: 45996.01
DATE: 04 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.04	ASPHALT		A	0.04				
	0.3	FILLING - grey brown, silty sand filling with gravel, brick and sandstone fragments		A	0.1 0.3		PID<5ppm		
	0.6	FILLING - dark brown, sand filling with brick, sandstone, glass, concrete, shale and minor ash		A	0.5 0.7				
	1	FILLING - brown, clayey sand filling with sandstone fragments, bricks and concrete		A	1.0 1.2				
	1.6	FILLING - grey brown mottled green, clay filling		A	1.5 1.7				
	2				2.0				
	2.2	FILLING - dark brown, clayey sand filling		A	2.2 2.5				
	2.6	FILLING - light brown and grey, sand filling		A	2.7 3.0				
	3			A	3.2 3.5				
	3.6	CLAY - grey mottled orange clay		A	3.7 4.0				
	4			A	4.2				
	4.5	Bore discontinued at 4.5m - target depth reached			4.5				
	5								
	6								
	7								
	8								
	9								

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 4.5m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo Ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 4
PROJECT No: 45996.01
DATE: 04 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.03	ASPHALT		A	0.03		PID<5ppm		Gatic cover
	0.1	FILLING - brown, silty sand filling with gravel			0.1				
	0.4	FILLING - brown, clayey sand filling with bricks, glass and sandstone fragments		A	0.3				
					0.5				Backfilled with gravel
		FILLING - yellow brown, sand filling with glass, bricks and gravel		A	0.7				
	1				1.0				1
				A	1.2				
					1.5				Bentonite
				A	1.7				
	2				2.0				2
	2.2	FILLING - dark brown, clay filling		A	2.2				
					2.5				
	2.6	FILLING - dark grey, clayey sand filling, wet		A	2.7				
	3				3.0				3 Backfilled with gravel
				A	3.2				
		- some brown clay at 3.6m			3.5				
				A	3.7				
	4				4.0				4 Machine slotted PVC screen
	4.1	CLAY - dark grey mottled light grey clay, wet		A	4.2				
					4.5				
	5								5
	5.0	CLAY - grey mottled orange clay		A	5.2				
					5.5				
	6								6 End cap
	6.0	Bore discontinued at 6.0m - target depth reached							
	7								7
	8								8
	9								9

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 6.0m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 5
PROJECT No: 45996.01
DATE: 04 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.01	ASPHALT		A	0.05				
	0.3	FILLING - brown, clayey sand filling with bricks, gravel and sandstone fragments		A	0.1 0.3				
		FILLING - yellow brown and grey, sand filling		A	0.5 0.7				
	1				1.0				1
	1.2	FILLING - yellow brown and grey, clayey sand filling		A	1.2				
	1.6	CLAY - dark grey clay		A	1.5 1.7				
	2				2.0				2
		- wet at 2.6m		A	2.2 2.5				
				A	2.7				
	3				3.0			▼	3
				A	3.2				
	3.5	Bore discontinued at 3.5m - target depth reached			3.5				
	4								4
	5								5
	6								6
	7								7
	8								8
	9								9

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 3.5m

WATER OBSERVATIONS: Free groundwater observed at 3.2m while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

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Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 6
PROJECT No: 45996.01
DATE: 04 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.3	FILLING - brown clayey sand filling with rootlets (topsoil)		A	0.0				
		FILLING - orange brown mottled grey, clay filling with bricks, concrete, sandstone, gravel, ash and slag and granite		A	0.1 0.3 0.5				
	1			A	0.7 1.0				1
				A*	1.2 1.5				
				A	1.7 2.0				
	2								2
	2.2	FILLING - grey sandy clay filling (wet)		A	2.2 2.5				
				A	2.7 3.0				
	3								3
	3.1	SAND - grey sand (possibly filling) (wet)		A	3.2 3.5				
	3.6	CLAY - grey clay, wet		A	3.7 4.0				
	4								4
	4.1	CLAY - light grey clay, wet		A	4.2				
	4.5	Bore discontinued at 4.5m - target depth reached			4.5				
	5								5
	6								6
	7								7
	8								8
	9								9

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 4.5m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS: *Denotes field replicate sample BD1/040209 collected at 1.2-1.5m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 7
PROJECT No: 45996.01
DATE: 05 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - brown silty sand filling with rootlets		A	0.0				
		- some bricks and plastic at 0.3m		A	0.3				
	0.6	FILLING - yellow brown, clayey sand filling with bricks, plastic, concrete and sandstone		A	0.5				
	1				0.7				
	1.2	Bore discontinued at 1.2m - refusal			1.0				

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 1.2m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 7A
PROJECT No: 45996.01
DATE: 05 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - yellow brown, sand filling with bricks, plastic, concrete and sandstone		A	1.2				Gatic cover; Backfilled with gravel
					1.5				
	1.6	FILLING - yellow brown and grey, sand filling		A	1.7				Bentonite
					2.0				
	2.2	CLAY - dark grey clay with organic odour - wet at 2.5m		A	2.2				
					2.5				
				A	2.7				
					3.0				Backfilled with gravel
				A	3.2				
					3.5				
				A	3.7				Machine slotted PVC screen
					4.0				
				A	4.2				
					4.5				
	4.9	SANDSTONE - medium strength, red brown and light brown sandstone		A	5.2				
	5.6	Bore discontinued at 5.6m - target depth reached			5.6				End cap

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 5.6m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS: Coring and rotary from 2.5 to 5.6m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo Ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 8
PROJECT No: 45996.01
DATE: 05 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - brown, silty sand filling with rootlets and plastic		A	0.0				Gatic cover
		- concrete and gravel at 0.3m			0.1				
				A	0.3				
	0.6				0.5				
	0.7	FILLING - railway ballast filling			0.7				Bentonite
1				A					
	1.0	FILLING - yellow brown, crushed sandstone filling			1.0				
		FILLING - orange brown, clayey sand filling with bricks, concrete, gravel and railway ballast			1.2				
				A					
	1.6				1.5				
		FILLING - brown, clayey sand filling with bricks and concrete			1.7				
2				A					
	2.1				2.0				
		FILLING - orange brown mottled grey filling			2.2				
				A					
	2.5				2.5				
		FILLING - brown, clayey sand filling with bricks, concrete and sandstone			2.7				
				A					
3					3.0				
	3.2	CLAY - light brown clay			3.2				Backfilled with gravel
				A					
		- mottled dark grey and wet at 3.6m			3.5				
					3.7				
				A					
4					4.0				Machine slotted PVC screen
					4.2				
	4.3	CLAY - dark grey clay with organic odour, wet		A					
					4.5				
	4.6	CLAY - orange brown clay							
5					5.2				
				A					
					5.5				End cap
	5.8	Bore discontinued at 5.8m							
6		- target depth reached							
7									
8									
9									

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 5.8m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS: Coring and rotary from 3.5-5.8m (to install piezometer)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 9
PROJECT No: 45996.01
DATE: 11 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING - brown, silty clay filling with some gravel, rootlets, trace of brick and sandstone fragments		A	0.0		PID=3ppm		
					0.2				
				A*			PID=3ppm		
		- slag at 0.6m			0.5		PID=5ppm		
	0.6	Bore discontinued at 0.6m			0.6				
		- on sandstone boulder filling							
	1								1
	2								2
	3								3
	4								4
	5								5
	6								6
	7								7
	8								8
	9								9

RIG: Hand auger **DRILLER:** JMS **LOGGED:** WFY **CASING:** Uncased

TYPE OF BORING: Hand auger

WATER OBSERVATIONS: No free groundwater observed

REMARKS: *Denotes field replicate sample BDA/110209 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧩ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 10
PROJECT No: 45996.01
DATE: 11 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.1	FILLING - brown, silty clay filling with some wood mulch, rootlets, trace of slag, tile fragments and plastic			0.0		PID=3ppm		
		Bore discontinued at 0.1m - on concrete			0.1				

RIG: Hand auger **DRILLER:** JMS **LOGGED:** WFY **CASING:** Uncased

TYPE OF BORING: Hand auger

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 11
PROJECT No: 45996.01
DATE: 11 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.02	ASPHALT		A	0.02		PID=1ppm		
	0.35	FILLING - light brown, sandy clay filling with some sandstone fragments, gravel, slag and rootlets		A*	0.2		PID=1ppm		
		Bore discontinued at 0.35m - due to possible underground service			0.35				

RIG: Hand auger **DRILLER:** JMS **LOGGED:** WFY **CASING:** Uncased

TYPE OF BORING: Hand auger

WATER OBSERVATIONS: No free groundwater observed

REMARKS: *Denotes field replicate samples BDB/110209 & BDB1/110209 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 12
PROJECT No: 45996.01
DATE: 06 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - brown, silty sand filling with rootlets		A	0.0				
	0.1				0.1				
	0.3	- brick concrete fragments at 0.3m		A	0.3				
	0.5				0.5				
	0.7			A	0.7				
1	1.0				1.0				1
	1.2	FILLING - orange brown, clay filling with sandstone fragments		A	1.2				
	1.5	FILLING - orange brown, crushed sandstone filling			1.5				
	1.7			A	1.7				
2	2.0				2.0				2
	2.2	CLAY - dark grey, sandy clay with organic odour		A	2.2				
	2.5				2.5				
	2.7	- wet at 2.6m		A	2.7				
3	3.0				3.0				3
	3.2			A	3.2				
	3.5				3.5				
	3.7			A	3.7				
4	4.0				4.0				4
	4.7	CLAY - green grey clay, wet		A	4.7				
5	5.0	Bore discontinued at 5.0m - target depth reached			5.0				5
6									6
7									7
8									8
9									9

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 5.0m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 13
PROJECT No: 45996.01
DATE: 05 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.2	FILLING - brown, silty sand filling with rootlets and wood pieces		A	0.0				
					0.1				
					0.3				
		FILLING - grey, silty sand filling with concrete fragments and wood		A	0.5				
	0.6				0.7				
		FILLING - yellow brown and grey, sand filling		A					
	1				1.0				1
	1.2	FILLING - brown, sandy clay filling		A	1.2				
					1.5				
	1.6	FILLING - dark grey, clay filling			1.7				
				A					
	2				2.0				2
					2.2				
				A					
					2.5				
					2.7				
		- wet at 2.7m		A					
	3				3.0				3
		- railway sleeper at 3.05 - 3.4m			3.2				
				A					
					3.4				
	3.5	CLAY - yellow brown mottled grey clay, wet							
					3.7				
				A					
	4				4.0				4
	4.0	Bore discontinued at 4.0m - target depth reached							
	5								5
	6								6
	7								7
	8								8
	9								9

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 4.0m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⊽ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 14
PROJECT No: 45996.01
DATE: 05 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.2	FILLING - brown, silty sand filling with rootlets		A	0.0				
					0.1				
		FILLING - yellow brown and brown, sand filling with bricks		A	0.3				
	0.6				0.5				
		FILLING - brown, sandy clay filling		A	0.7				
	1				1.0				
	1.2	FILLING - brown, clayey sand filling		A	1.2				
					1.5				
				A	1.7				
	2				2.0				
		- wet at 2.2m		A	2.2				
					2.5				
	2.7	FILLING - brown, sand filling, wet		A	2.7				
	3				3.0				
	3.0	CLAY - grey clay, wet		A	3.2				
					3.5				
	3.8	SANDY CLAY - red orange brown, sandy clay, wet							
	4			A	4.2				
	4.5	Bore discontinued at 4.5m - target depth reached			4.5				
	5								
	6								
	7								
	8								
	9								

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 4.5m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo Ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 15
PROJECT No: 45996.01
DATE: 05 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.04	ASPHALT		A	0.05				
	0.3	FILLING - brown, sand filling with brick and sandstone fragments		A	0.1 0.3				
		FILLING - yellow brown and grey, sand filling			0.5				
				A	0.7				
	1				1.0				1
				A	1.2				
					1.5				
	1.7	FILLING - grey sand filling, wet		A	1.7				
	2				2.0				2
				A	2.2				
					2.5				
				A	2.7				
	3				3.0				3
	3.2	CLAY - dark grey clay, wet		A	3.2				
					3.5				
	3.7	CLAY - dark grey, sandy clay, wet		A	3.7				
	4				4.0				4
	4.1	CLAY - orange brown mottled grey clay, wet		A	4.2				
	4.5	Bore discontinued at 4.5m - target depth reached			4.5				
	5								5
	6								6
	7								7
	8								8
	9								9

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 4.5m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Hutchinson Builders
PROJECT: Environmental Assessment
LOCATION: 4-12 Buckland Street, Ultimo

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 16
PROJECT No: 45996.01
DATE: 05 Feb 09
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.0	FILLING - brown, silty sand filling with rootlets		A	0.0				
		- concrete and gravel fragments at 0.2m		A	0.1 0.2 0.5				
	0.6	FILLING - brown, clayey sand filling with bricks, sandstone and gravel		A	0.7 1.0				
	1			A	1.2 1.5				
				A	1.7 2.0				
	2	- tiles at 2.2m		A	2.2 2.5				
	2.6	FILLING - orange brown, clay filling		A	2.7 3.0				
	3								
	3.2	CLAY - dark grey clay with organic odour, wet		A	3.2 3.5				
				A	3.7 4.0				
	4								
				A	4.7				
	5.0	Bore discontinued at 5.0m			5.0				
		- target depth reached							
	6								
	7								
	8								
	9								

RIG: Scout **DRILLER:** Lloyd **LOGGED:** JMD **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 5.0m

WATER OBSERVATIONS: No free groundwater observed while augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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APPENDIX D
Laboratory Results and Chain of Custody Documentation

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26426

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**45996.01**
No. of samples:	20 Soils
Date samples received:	09/02/09
Date completed instructions received:	09/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	16/02/09
Date of Preliminary Report:	Not Issued
Issue Date:	13/02/09

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Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer
Business Development & Quality Manager

Joshua Lim
Chemist

VOCs in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26426-2 2/0.7-1.0 4/02/2009 Soil	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-13 14/2.2-2.5 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009
Dichlorodifluoromethane	mg/kg	<10	<10	<10
Chloromethane	mg/kg	<10	<10	<10
Vinyl Chloride	mg/kg	<10	<10	<10
Bromomethane	mg/kg	<10	<10	<10
Chloroethane	mg/kg	<10	<10	<10
Trichlorofluoromethane	mg/kg	<10	<10	<10
1,1-Dichloroethene	mg/kg	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	mg/kg	<1.0	<1.0	<1.0
1,1-dichloroethane	mg/kg	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	mg/kg	<1.0	<1.0	<1.0
bromochloromethane	mg/kg	<1.0	<1.0	<1.0
chloroform	mg/kg	<1.0	<1.0	<1.0
2,2-dichloropropane	mg/kg	<1.0	<1.0	<1.0
1,2-dichloroethane	mg/kg	<1.0	<1.0	<1.0
1,1,1-trichloroethane	mg/kg	<1.0	<1.0	<1.0
1,1-dichloropropene	mg/kg	<1.0	<1.0	<1.0
carbon tetrachloride	mg/kg	<1.0	<1.0	<1.0
Benzene	mg/kg	<0.5	<0.5	<0.5
dibromomethane	mg/kg	<1.0	<1.0	<1.0
1,2-dichloropropane	mg/kg	<1.0	<1.0	<1.0
trichloroethene	mg/kg	<1.0	<1.0	<1.0
bromodichloromethane	mg/kg	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	mg/kg	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	mg/kg	<1.0	<1.0	<1.0
1,1,2-trichloroethane	mg/kg	<1.0	<1.0	<1.0
Toluene	mg/kg	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1.0	<1.0	<1.0
dibromochloromethane	mg/kg	<1.0	<1.0	<1.0
1,2-dibromoethane	mg/kg	<1.0	<1.0	<1.0
tetrachloroethene	mg/kg	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0	<1.0	<1.0
chlorobenzene	mg/kg	<1.0	<1.0	<1.0
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0
bromoform	mg/kg	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0
styrene	mg/kg	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	mg/kg	<1.0	<1.0	<1.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0

VOCs in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26426-2 2/0.7-1.0 4/02/2009 Soil	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-13 14/2.2-2.5 5/02/2009 Soil
1,2,3-trichloropropane*	mg/kg	<1.0	<1.0	<1.0
isopropylbenzene	mg/kg	<1.0	<1.0	<1.0
bromobenzene	mg/kg	<1.0	<1.0	<1.0
n-propyl benzene	mg/kg	<1.0	<1.0	<1.0
2-chlorotoluene	mg/kg	<1.0	<1.0	<1.0
4-chlorotoluene	mg/kg	<1.0	<1.0	<1.0
1,3,5-trimethyl benzene	mg/kg	<1.0	<1.0	<1.0
tert-butyl benzene	mg/kg	<1.0	<1.0	<1.0
1,2,4-trimethyl benzene	mg/kg	<1.0	<1.0	<1.0
1,3-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0
sec-butyl benzene	mg/kg	<1.0	<1.0	<1.0
1,4-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0
4-isopropyl toluene	mg/kg	<1.0	<1.0	<1.0
1,2-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0
n-butyl benzene	mg/kg	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	mg/kg	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	mg/kg	<1.0	<1.0	<1.0
hexachlorobutadiene	mg/kg	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	mg/kg	<1.0	<1.0	<1.0
Surrogate Dibromofluorometha	%	75	68	82
Surrogate aaa-Trifluorotoluene	%	92	92	81
Surrogate Toluene-d8	%	104	92	104
Surrogate 4-Bromofluorobenzene	%	75	71	66

vTPH & BTEX in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-1 1/0-0.5 6/02/2009 Soil	26426-3 2/3.2-3.5 4/02/2009 Soil	26426-4 4/0.3-0.5 4/02/2009 Soil	26426-5 5/0.3-0.5 4/02/2009 Soil	26426-7 6/1.2-1.5 4/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
vTPH C6 - C9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	97	79	83	112	86

vTPH & BTEX in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-10 8/2.7-3.0 5/02/2009 Soil	26426-11 12/0-0.1 6/02/2009 Soil	26426-12 13/3.7-4.0 5/02/2009 Soil	26426-13 14/2.2-2.5 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
vTPH C6 - C9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	92	72	103	78	81

vTPH & BTEX in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-14 15/0.3-0.5 5/02/2009 Soil	26426-15 16/0.2-0.5 5/02/2009 Soil	26426-17 Trip Spike 4/02/2009 Soil	26426-18 Trip Blank 4/02/2009 Soil	26426-19 3/0.3-0.5 4/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
vTPH C6 - C9	mg/kg	<25	<25	[NA]	[NA]	<25
Benzene	mg/kg	<0.5	<0.5	103%	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	110%	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	104%	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	107%	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	106%	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	82	75	101	86	82

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	26426-1	26426-3	26426-4	26426-5	26426-7
Your Reference	----------	1/0-0.5	2/3.2-3.5	4/0.3-0.5	5/0.3-0.5	6/1.2-1.5
Date Sampled	----------	6/02/2009	4/02/2009	4/02/2009	4/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	820	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	540	<100	<100	<100	<100
Surrogate o-Terphenyl	%	128	80	60	96	98

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	26426-8	26426-10	26426-11	26426-12	26426-13
Your Reference	----------	7/0.7-1.0	8/2.7-3.0	12/0-0.1	13/3.7-4.0	14/2.2-2.5
Date Sampled	----------	5/02/2009	5/02/2009	6/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	99	98	98	96	93

sTPH in Soil (C10-C36)				
Our Reference:	UNITS	26426-14	26426-15	26426-19
Your Reference	----------	15/0.3-0.5	16/0.2-0.5	3/0.3-0.5
Date Sampled	----------	5/02/2009	5/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	590	130
TPH C_{29} - C_{36}	mg/kg	<100	330	<100
Surrogate o-Terphenyl	%	96	131	102

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-1 1/0-0.5 6/02/2009 Soil	26426-2 2/0.7-1.0 4/02/2009 Soil	26426-3 2/3.2-3.5 4/02/2009 Soil	26426-4 4/0.3-0.5 4/02/2009 Soil	26426-5 5/0.3-0.5 4/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Naphthalene	mg/kg	0.9	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	4.2	<0.1	<0.1	<0.1	0.1
Acenaphthene	mg/kg	0.7	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	2.8	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	33	0.2	<0.1	0.6	0.8
Anthracene	mg/kg	8.3	<0.1	<0.1	<0.1	0.1
Fluoranthene	mg/kg	39	0.3	<0.1	1.4	1.4
Pyrene	mg/kg	37	0.3	<0.1	1.6	1.5
Benzo(a)anthracene	mg/kg	20	0.2	<0.1	0.7	0.7
Chrysene	mg/kg	17	0.2	<0.1	0.7	0.7
Benzo(b+k)fluoranthene	mg/kg	29	0.3	<0.2	1.1	1.2
Benzo(a)pyrene	mg/kg	21	0.2	<0.05	0.7	0.8
Indeno(1,2,3-c,d)pyrene	mg/kg	14	0.1	<0.1	0.5	0.6
Dibenzo(a,h)anthracene	mg/kg	1.6	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	10	<0.1	<0.1	0.4	0.4
Surrogate p-Terphenyl-d14	%	84	84	86	85	84

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-6 6/0-0.1 4/02/2009 Soil	26426-7 6/1.2-1.5 4/02/2009 Soil	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-9 8/1.2-1.5 5/02/2009 Soil	26426-10 8/2.7-3.0 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	0.4	0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.6	2.3	0.5	0.3	0.5
Anthracene	mg/kg	<0.1	0.4	<0.1	<0.1	0.1
Fluoranthene	mg/kg	1.1	2.4	0.7	0.7	0.9
Pyrene	mg/kg	1.1	2.2	0.6	0.8	0.8
Benzo(a)anthracene	mg/kg	0.5	1.0	0.3	0.4	0.4
Chrysene	mg/kg	0.6	0.9	0.3	0.4	0.4
Benzo(b+k)fluoranthene	mg/kg	1.0	1.5	0.4	0.8	0.6
Benzo(a)pyrene	mg/kg	0.7	1.0	0.3	0.5	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	0.6	0.2	0.3	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	0.4	0.1	0.3	0.2
Surrogate p-Terphenyl-d14	%	83	82	86	86	82

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-11 12/0-0.1 6/02/2009 Soil	26426-12 13/3.7-4.0 5/02/2009 Soil	26426-13 14/2.2-2.5 5/02/2009 Soil	26426-14 15/0.3-0.5 5/02/2009 Soil	26426-15 16/0.2-0.5 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.8
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	3.5
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.3
Phenanthrene	mg/kg	0.1	<0.1	0.2	<0.1	20
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	4.8
Fluoranthene	mg/kg	0.3	<0.1	0.2	<0.1	27
Pyrene	mg/kg	0.3	<0.1	0.2	<0.1	25
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	13
Chrysene	mg/kg	0.1	<0.1	0.1	<0.1	12
Benzo(b+k)fluoranthene	mg/kg	0.2	<0.2	<0.2	<0.2	22
Benzo(a)pyrene	mg/kg	0.1	<0.05	0.05	<0.05	16
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	11
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.3
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	7.6
Surrogate p-Terphenyl-d_{14}	%	86	86	82	83	82

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-16 BD1/040209 4/02/2009 Soil	26426-19 3/0.3-0.5 4/02/2009 Soil	26426-20 3/1.7-2.0 4/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009
Naphthalene	mg/kg	<0.1	0.2	<0.1
Acenaphthylene	mg/kg	0.3	0.1	<0.1
Acenaphthene	mg/kg	<0.1	0.7	<0.1
Fluorene	mg/kg	0.2	0.3	<0.1
Phenanthrene	mg/kg	1.6	5.0	<0.1
Anthracene	mg/kg	0.3	0.7	<0.1
Fluoranthene	mg/kg	1.6	5.2	<0.1
Pyrene	mg/kg	1.5	4.8	<0.1
Benzo(a)anthracene	mg/kg	0.7	2.6	<0.1
Chrysene	mg/kg	0.7	2.9	<0.1
Benzo(b+k)fluoranthene	mg/kg	1.0	3.8	<0.2
Benzo(a)pyrene	mg/kg	0.7	2.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	1.3	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.2	<0.1
Benzo(g,h,i)perylene	mg/kg	0.3	0.9	<0.1
Surrogate p-Terphenyl-d_{14}	%	83	81	86

Organochlorine Pesticides in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26426-1 1/0-0.5 6/02/2009 Soil	26426-2 2/0.7-1.0 4/02/2009 Soil	26426-5 5/0.3-0.5 4/02/2009 Soil	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-10 8/2.7-3.0 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	110	100	104	100	98

Organochlorine Pesticides in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26426-11 12/0-0.1 6/02/2009 Soil	26426-15 16/0.2-0.5 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	106	98

Organophosphorus Pesticides Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-1 1/0-0.5 6/02/2009 Soil	26426-2 2/0.7-1.0 4/02/2009 Soil	26426-5 5/0.3-0.5 4/02/2009 Soil	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-10 8/2.7-3.0 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	110	100	104	100	98

Organophosphorus Pesticides Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-11 12/0-0.1 6/02/2009 Soil	26426-15 16/0.2-0.5 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009
Diazinon	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	106	98

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-1 1/0-0.5 6/02/2009 Soil	26426-2 2/0.7-1.0 4/02/2009 Soil	26426-5 5/0.3-0.5 4/02/2009 Soil	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-10 8/2.7-3.0 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Arochlor 1016	mg/kg	<1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	110	100	104	100	98

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-11 12/0-0.1 6/02/2009 Soil	26426-15 16/0.2-0.5 5/02/2009 Soil
Date extracted	-	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009
Arochlor 1016	mg/kg	<0.1	<1
Arochlor 1232	mg/kg	<0.1	<1
Arochlor 1242	mg/kg	<0.1	<1
Arochlor 1248	mg/kg	<0.1	<1
Arochlor 1254	mg/kg	<0.1	<1
Arochlor 1260	mg/kg	<0.1	<1
Surrogate TCLMX	%	106	98

Total Phenolics in Soil						
Our Reference:	UNITS	26426-1	26426-2	26426-5	26426-8	26426-10
Your Reference	----------	1/0-0.5	2/0.7-1.0	5/0.3-0.5	7/0.7-1.0	8/2.7-3.0
Date Sampled	----------	6/02/2009	4/02/2009	4/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2009	12/02/2009	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	13/02/2009	13/02/2009	13/02/2009	13/02/2009	13/02/2009
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0

Total Phenolics in Soil			
Our Reference:	UNITS	26426-11	26426-15
Your Reference	----------	12/0-0.1	16/0.2-0.5
Date Sampled	----------	6/02/2009	5/02/2009
Type of sample		Soil	Soil
Date extracted	-	12/02/2009	12/02/2009
Date analysed	-	13/02/2009	13/02/2009
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0

Acid Extractable metals in soil						
Our Reference:	UNITS	26426-1	26426-2	26426-3	26426-4	26426-5
Your Reference	----------	1/0-0.5	2/0.7-1.0	2/3.2-3.5	4/0.3-0.5	5/0.3-0.5
Date Sampled	----------	6/02/2009	4/02/2009	4/02/2009	4/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	14	3	19	7	7
Copper	mg/kg	26	5	2	32	18
Lead	mg/kg	88	25	10	100	50
Mercury	mg/kg	<0.1	<0.1	<0.1	0.8	<0.1
Nickel	mg/kg	8	2	1	5	4
Zinc	mg/kg	100	5	22	89	44

Acid Extractable metals in soil						
Our Reference:	UNITS	26426-6	26426-7	26426-8	26426-9	26426-10
Your Reference	----------	6/0-0.1	6/1.2-1.5	7/0.7-1.0	8/1.2-1.5	8/2.7-3.0
Date Sampled	----------	4/02/2009	4/02/2009	5/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Arsenic	mg/kg	<4	7	4	5	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	10	14	18	13	18
Copper	mg/kg	16	45	12	210	28
Lead	mg/kg	49	77	300	95	240
Mercury	mg/kg	<0.1	0.3	1.6	0.7	0.7
Nickel	mg/kg	6	13	2	9	11
Zinc	mg/kg	53	230	32	180	87

Acid Extractable metals in soil						
Our Reference:	UNITS	26426-11	26426-12	26426-13	26426-14	26426-15
Your Reference	----------	12/0-0.1	13/3.7-4.0	14/2.2-2.5	15/0.3-0.5	16/0.2-0.5
Date Sampled	----------	6/02/2009	5/02/2009	5/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	5	32	5	8	11
Copper	mg/kg	10	4	3	6	47
Lead	mg/kg	18	16	14	29	150
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	1.1
Nickel	mg/kg	4	2	<1	2	8
Zinc	mg/kg	39	2	15	11	150

Acid Extractable metals in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-16 BD1/040209 4/02/2009 Soil	26426-19 3/0.3-0.5 4/02/2009 Soil	26426-20 3/1.7-2.0 4/02/2009 Soil
Date digested	-	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009
Arsenic	mg/kg	<4	9	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5
Chromium	mg/kg	13	11	15
Copper	mg/kg	18	60	3
Lead	mg/kg	52	290	19
Mercury	mg/kg	0.2	2.6	<0.1
Nickel	mg/kg	11	11	3
Zinc	mg/kg	22	84	2

Miscellaneous Inorg - soil						
Our Reference:	UNITS	26426-1	26426-2	26426-5	26426-8	26426-10
Your Reference	----------	1/0-0.5	2/0.7-1.0	5/0.3-0.5	7/0.7-1.0	8/2.7-3.0
Date Sampled	----------	6/02/2009	4/02/2009	4/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Total Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Miscellaneous Inorg - soil			
Our Reference:	UNITS	26426-11	26426-15
Your Reference	----------	12/0-0.1	16/0.2-0.5
Date Sampled	----------	6/02/2009	5/02/2009
Type of sample		Soil	Soil
Date prepared	-	11/02/2009	11/02/2009
Date analysed	-	11/02/2009	11/02/2009
Total Cyanide	mg/kg	<0.5	<0.5

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-1 1/0-0.5 6/02/2009 Soil	26426-2 2/0.7-1.0 4/02/2009 Soil	26426-3 2/3.2-3.5 4/02/2009 Soil	26426-4 4/0.3-0.5 4/02/2009 Soil	26426-5 5/0.3-0.5 4/02/2009 Soil
Date prepared	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Moisture	%	9.7	2.5	16	5.7	6.3

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-6 6/0-0.1 4/02/2009 Soil	26426-7 6/1.2-1.5 4/02/2009 Soil	26426-8 7/0.7-1.0 5/02/2009 Soil	26426-9 8/1.2-1.5 5/02/2009 Soil	26426-10 8/2.7-3.0 5/02/2009 Soil
Date prepared	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Moisture	%	7.0	12	11	8.5	25

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-11 12/0-0.1 6/02/2009 Soil	26426-12 13/3.7-4.0 5/02/2009 Soil	26426-13 14/2.2-2.5 5/02/2009 Soil	26426-14 15/0.3-0.5 5/02/2009 Soil	26426-15 16/0.2-0.5 5/02/2009 Soil
Date prepared	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009	10/02/2009	10/02/2009
Moisture	%	3.6	23	19	3.2	11

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-16 BD1/040209 4/02/2009 Soil	26426-19 3/0.3-0.5 4/02/2009 Soil	26426-20 3/1.7-2.0 4/02/2009 Soil
Date prepared	-	10/02/2009	10/02/2009	10/02/2009
Date analysed	-	10/02/2009	10/02/2009	10/02/2009
Moisture	%	10	7.4	17

Asbestos ID - soils						
Our Reference:	UNITS	26426-1	26426-2	26426-4	26426-5	26426-6
Your Reference	----------	1/0-0.5	2/0.7-1.0	4/0.3-0.5	5/0.3-0.5	6/0-0.1
Date Sampled	----------	6/02/2009	4/02/2009	4/02/2009	4/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Sample Description	-	40g soil	40g soil	40g soil	40g soil	40g soil
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Asbestos ID - soils						
Our Reference:	UNITS	26426-8	26426-9	26426-11	26426-12	26426-13
Your Reference	----------	7/0.7-1.0	8/1.2-1.5	12/0-0.1	13/3.7-4.0	14/2.2-2.5
Date Sampled	----------	5/02/2009	5/02/2009	6/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Sample Description	-	40g soil	40g soil	40g soil	40g soil	40g soil
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Asbestos ID - soils				
Our Reference:	UNITS	26426-14	26426-15	26426-19
Your Reference	----------	15/0.3-0.5	16/0.2-0.5	3/0.3-0.5
Date Sampled	----------	5/02/2009	5/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil
Date analysed	-	11/02/2009	11/02/2009	11/02/2009
Sample Description	-	40g soil	40g soil	40g soil
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
GC.14	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
GC.16	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC.8	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.30	Total Phenolics - determined colorimetrically following disitillation.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.13	Cyanide - determined colourimetrically, following distillation. Based on APHA 20th ED, 4500-CN_C,E.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB.1	Qualitative identification of asbestos type fibres in bulk using Polarised Light Microscopy and Dispersion Staining Techniques.

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/2/09	26426-13	10/02/2009 || 10/02/2009	LCS-4	10/2/09
Date analysed	-			11/2/09	26426-13	11/02/2009 || 11/02/2009	LCS-4	11/2/09
Dichlorodifluoromethane	mg/kg	10	GC.14	<10	26426-13	<10 || <10	[NR]	[NR]
Chloromethane	mg/kg	10	GC.14	<10	26426-13	<10 || <10	[NR]	[NR]
Vinyl Chloride	mg/kg	10	GC.14	<10	26426-13	<10 || <10	[NR]	[NR]
Bromomethane	mg/kg	10	GC.14	<10	26426-13	<10 || <10	[NR]	[NR]
Chloroethane	mg/kg	10	GC.14	<10	26426-13	<10 || <10	[NR]	[NR]
Trichlorofluoromethane	mg/kg	10	GC.14	<10	26426-13	<10 || <10	[NR]	[NR]
1,1-Dichloroethene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,1-dichloroethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	96%
cis-1,2-dichloroethene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
bromochloromethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
chloroform	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	76%
2,2-dichloropropane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2-dichloroethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	82%
1,1,1-trichloroethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	90%
1,1-dichloropropene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
carbon tetrachloride	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
Benzene	mg/kg	0.5	GC.14	<0.5	26426-13	<0.5 || <0.5	[NR]	[NR]
dibromomethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2-dichloropropane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
trichloroethene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	97%
bromodichloromethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	85%
trans-1,3-dichloropropene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
Toluene	mg/kg	0.5	GC.14	<0.5	26426-13	<0.5 || <0.5	[NR]	[NR]
1,3-dichloropropane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	80%
dibromochloromethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2-dibromoethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	LCS-4	107%
tetrachloroethene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,1,1,2-tetrachloroethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
chlorobenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
Ethylbenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
bromoform	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
m+p-xylene	mg/kg	2	GC.14	<2.0	26426-13	<2.0 || <2.0	[NR]	[NR]
styrene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
o-Xylene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2,3-trichloropropane*	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
isopropylbenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
bromobenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
n-propyl benzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
2-chlorotoluene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
4-chlorotoluene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,3,5-trimethyl benzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
tert-butyl benzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
sec-butyl benzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
4-isopropyl toluene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
n-butyl benzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
hexachlorobutadiene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	1	GC.14	<1.0	26426-13	<1.0 || <1.0	[NR]	[NR]
Surrogate Dibromofluorometha	%		GC.14	82	26426-13	82 || 67 || RPD: 20	LCS-4	79%
Surrogate aaa-Trifluorotoluene	%		GC.14	76	26426-13	81 || 96 || RPD: 17	LCS-4	99%
Surrogate Toluene-d8	%		GC.14	92	26426-13	104 || 102 || RPD: 2	LCS-4	103%
Surrogate 4-Bromofluorobenzene	%		GC.14	75	26426-13	66 || 67 || RPD: 2	LCS-4	71%

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/2/09	26426-1	10/02/2009 || 10/02/2009	LCS-3	10/2/09
Date analysed	-			11/2/09	26426-1	11/02/2009 || 11/02/2009	LCS-3	11/2/09
vTPH C_8 - C_9	mg/kg	25	GC.16	<25	26426-1	<25 || <25	LCS-3	123%
Benzene	mg/kg	0.5	GC.16	<0.5	26426-1	<0.5 || <0.5	LCS-3	107%
Toluene	mg/kg	0.5	GC.16	<0.5	26426-1	<0.5 || <0.5	LCS-3	135%
Ethylbenzene	mg/kg	1	GC.16	<1.0	26426-1	<1.0 || <1.0	LCS-3	123%
m+p-xylene	mg/kg	2	GC.16	<2.0	26426-1	<2.0 || <2.0	LCS-3	125%
o-Xylene	mg/kg	1	GC.16	<1.0	26426-1	<1.0 || <1.0	LCS-3	131%
Surrogate aaa-Trifluorotoluene	%		GC.16	83	26426-1	97 || 80 || RPD: 19	LCS-3	82%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/02/2009	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/02/2009
Date analysed	-			10/02/2009	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/02/2009
TPH C_{10} - C_{14}	mg/kg	50	GC.3	<50	26426-1	<50 || <50	LCS-2	108%
TPH C_{15} - C_{28}	mg/kg	100	GC.3	<100	26426-1	820 || 760 || RPD: 8	LCS-2	93%
TPH C_{29} - C_{36}	mg/kg	100	GC.3	<100	26426-1	540 || 460 || RPD: 16	LCS-2	90%
Surrogate o-Terphenyl	%		GC.3	95	26426-1	128 || 122 || RPD: 5	LCS-2	94%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/2/09	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/2/09
Date analysed	-			10/2/09	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/2/09
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	0.9 || 1 || RPD: 11	LCS-2	88%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	4.2 || 4.5 || RPD: 7	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	0.7 || 0.8 || RPD: 13	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	2.8 || 3.0 || RPD: 7	LCS-2	92%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	33 || 32 || RPD: 3	LCS-2	97%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	8.3 || 8.0 || RPD: 4	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	39 || 34 || RPD: 14	LCS-2	95%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	37 || 32 || RPD: 14	LCS-2	100%
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	20 || 16 || RPD: 22	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	17 || 14 || RPD: 19	LCS-2	98%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	26426-1	29 || 24 || RPD: 19	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	26426-1	21 || 18 || RPD: 15	LCS-2	109%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	14 || 12 || RPD: 15	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	1.6 || 1.5 || RPD: 6	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	26426-1	10 || 8.4 || RPD: 17	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	88	26426-1	84 || 84 || RPD: 0	LCS-2	82%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/02/2009	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/02/2009
Date analysed	-			11/02/09	26426-1	11/02/2009 || 11/02/2009	LCS-2	11/02/09
HCB	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	106%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	91%
Heptachlor	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	95%
delta-BHC	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	102%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	109%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	99%
Dieldrin	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	107%
Endrin	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	104%
pp-DDD	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	99%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	LCS-2	102%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	94	26426-1	110 || 103 || RPD: 7	LCS-2	91%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/02/2009	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/02/2009
Date analysed	-			11/02/09	26426-1	11/02/2009 || 11/02/2009	LCS-2	11/02/09
Diazinon	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	LCS-2	130%
Fenitrothion	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	LCS-2	104%
Bromophos-ethyl	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	GC.8	<0.1	26426-1	<0.1 || <0.1	LCS-2	72%
Surrogate TCLMX	%		GC.8	94	26426-1	110 || 103 || RPD: 7	LCS-2	96%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/02/2009	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/02/2009
Date analysed	-			11/02/09	26426-1	11/02/2009 || 11/02/2009	LCS-2	11/02/09
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	26426-1	<1 || <1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	26426-1	<1 || <1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	26426-1	<1 || <1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	26426-1	<1 || <1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	26426-1	<1 || <1	LCS-2	83%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	26426-1	<1 || <1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	94	26426-1	110 || 103 || RPD: 7	LCS-2	90%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/02/2009	[NT]	[NT]	LCS-2	12/02/2009
Date analysed	-			13/02/09	[NT]	[NT]	LCS-2	13/02/09
Total Phenolics (as Phenol)	mg/kg	5	LAB.30	<5.0	[NT]	[NT]	LCS-2	90%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			10/2/09	26426-1	10/02/2009 || 10/02/2009	LCS-2	10/2/09
Date analysed	-			11/2/09	26426-1	11/02/2009 || 11/02/2009	LCS-2	11/2/09
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	26426-1	<4 || <4	LCS-2	100%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	26426-1	<0.5 || <0.5	LCS-2	107%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	26426-1	14 || 12 || RPD: 15	LCS-2	108%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	26426-1	26 || 38 || RPD: 38	LCS-2	106%
Lead	mg/kg	1	Metals.20 ICP-AES	<1	26426-1	88 || 66 || RPD: 29	LCS-2	106%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	26426-1	<0.1 || <0.1	LCS-2	93%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	26426-1	8 || 9 || RPD: 12	LCS-2	107%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	26426-1	100 || 74 || RPD: 30	LCS-2	103%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			11/02/2009	26426-1	11/02/2009 || 11/02/2009	LCS-1	11/02/2009
Date analysed	-			11/02/2009	26426-1	11/02/2009 || 11/02/2009	LCS-1	11/02/2009
Total Cyanide	mg/kg	0.5	LAB.13	<0.5	26426-1	<0.5 || <0.5	LCS-1	99%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			10/2/09
Date analysed	-			10/2/09
Moisture	%	0.1	LAB.8	<0.10

QUALITY CONTROL Asbestos ID - soils	UNITS	PQL	METHOD	Blank
Date analysed	-			[NT]

QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26426-8	10/2/09
Date analysed	-	[NT]	[NT]	26426-8	11/2/09
Dichlorodifluoromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Chloromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromomethane	mg/kg	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Chloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	mg/kg	[NT]	[NT]	26426-8	83%
cis-1,2-dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
bromochloromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
chloroform	mg/kg	[NT]	[NT]	26426-8	70%
2,2-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	mg/kg	[NT]	[NT]	26426-8	72%
1,1,1-trichloroethane	mg/kg	[NT]	[NT]	26426-8	83%
1,1-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
carbon tetrachloride	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
dibromomethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
trichloroethene	mg/kg	[NT]	[NT]	26426-8	100%
bromodichloromethane	mg/kg	[NT]	[NT]	26426-8	98%
trans-1,3-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Toluene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
dibromochloromethane	mg/kg	[NT]	[NT]	26426-8	97%
1,2-dibromoethane	mg/kg	[NT]	[NT]	[NR]	[NR]
tetrachloroethene	mg/kg	[NT]	[NT]	26426-8	119%
1,1,1,2-tetrachloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
chlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
bromoform	mg/kg	[NT]	[NT]	[NR]	[NR]
m+p-xylene	mg/kg	[NT]	[NT]	[NR]	[NR]
styrene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
o-Xylene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane*	mg/kg	[NT]	[NT]	[NR]	[NR]
isopropylbenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
bromobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	mg/kg	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	mg/kg	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
1,3,5-trimethyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
tert-butyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
sec-butyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
hexachlorobutadiene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluorometha	%	[NT]	[NT]	26426-8	78%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	26426-8	106%
Surrogate Toluene-d8	%	[NT]	[NT]	26426-8	111%
Surrogate 4-Bromofluorobenzene	%	[NT]	[NT]	26426-8	70%

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	26426-13	10/02/2009 || 10/02/2009	26426-8	10/2/09
Date analysed	-	26426-13	11/02/2009 || 11/02/2009	26426-8	11/2/09
vTPH C6 - C9	mg/kg	26426-13	<25 || <25	26426-8	88%
Benzene	mg/kg	26426-13	<0.5 || <0.5	26426-8	76%
Toluene	mg/kg	26426-13	<0.5 || <0.5	26426-8	107%
Ethylbenzene	mg/kg	26426-13	<1.0 || <1.0	26426-8	78%
m+p-xylene	mg/kg	26426-13	<2.0 || <2.0	26426-8	100%
o-Xylene	mg/kg	26426-13	<1.0 || <1.0	26426-8	102%
Surrogate aaa-Trifluorotoluene	%	26426-13	81 || 96 || RPD: 17	26426-8	103%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	26426-13	10/02/2009 || 10/02/2009	26426-3	10/02/2009
Date analysed	-	26426-13	10/02/2009 || 10/02/2009	26426-3	10/02/2009
TPH C_{10} - C_{14}	mg/kg	26426-13	<50 || <50	26426-3	113%
TPH C_{15} - C_{28}	mg/kg	26426-13	<100 || <100	26426-3	98%
TPH C_{29} - C_{36}	mg/kg	26426-13	<100 || <100	26426-3	94%
Surrogate o-Terphenyl	%	26426-13	93 || 98 || RPD: 5	26426-3	98%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	26426-13	10/02/2009 || 10/02/2009	26426-8	10/2/09
Date analysed	-	26426-13	10/02/2009 || 10/02/2009	26426-8	10/2/09
Naphthalene	mg/kg	26426-13	<0.1 || <0.1	26426-8	91%
Acenaphthylene	mg/kg	26426-13	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	26426-13	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	26426-13	<0.1 || <0.1	26426-8	94%
Phenanthrene	mg/kg	26426-13	0.2 || <0.1	26426-8	91%
Anthracene	mg/kg	26426-13	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	26426-13	0.2 || <0.1	26426-8	95%
Pyrene	mg/kg	26426-13	0.2 || <0.1	26426-8	102%
Benzo(a)anthracene	mg/kg	26426-13	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	26426-13	0.1 || <0.1	26426-8	93%
Benzo(b+k)fluoranthene	mg/kg	26426-13	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	26426-13	0.05 || <0.05	26426-8	105%
Indeno(1,2,3-c,d)pyrene	mg/kg	26426-13	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	26426-13	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	26426-13	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	26426-13	82 || 82 || RPD: 0	26426-8	87%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26426-8	10/02/2009
Date analysed	-	[NT]	[NT]	26426-8	11/02/09
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	26426-8	106%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	26426-8	91%
Heptachlor	mg/kg	[NT]	[NT]	26426-8	95%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	26426-8	102%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	26426-8	109%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	26426-8	99%
Dieldrin	mg/kg	[NT]	[NT]	26426-8	107%
Endrin	mg/kg	[NT]	[NT]	26426-8	104%
pp-DDD	mg/kg	[NT]	[NT]	26426-8	99%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	26426-8	102%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	26426-8	91%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26426-8	10/02/2009
Date analysed	-	[NT]	[NT]	26426-8	11/02/09
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	[NT]	[NT]	26426-8	126%
Fenitrothion	mg/kg	[NT]	[NT]	26426-8	96%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	26426-8	70%
Surrogate TCLMX	%	[NT]	[NT]	26426-8	96%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26426-8	10/02/2009
Date analysed	-	[NT]	[NT]	26426-8	11/02/09
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	26426-8	83%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	26426-8	92%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	26426-13	10/02/2009 || 10/02/2009	26426-8	10/2/09
Date analysed	-	26426-13	11/02/2009 || 11/02/2009	26426-8	11/2/09
Arsenic	mg/kg	26426-13	<4 || <4	26426-8	108%
Cadmium	mg/kg	26426-13	<0.5 || <0.5	26426-8	104%
Chromium	mg/kg	26426-13	5 || 3 || RPD: 50	26426-8	112%
Copper	mg/kg	26426-13	3 || 4 || RPD: 29	26426-8	106%
Lead	mg/kg	26426-13	14 || 18 || RPD: 25	26426-8	102%
Mercury	mg/kg	26426-13	<0.1 || <0.1	26426-8	125%
Nickel	mg/kg	26426-13	<1 || <1	26426-8	105%
Zinc	mg/kg	26426-13	15 || 18 || RPD: 18	26426-8	106%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	26426-2	11/02/2009
Date analysed	-	[NT]	[NT]	26426-2	11/02/2009
Total Cyanide	mg/kg	[NT]	[NT]	26426-2	109%

Report Comments:

PCB in soil: PQL raised due to interference from analytes in the sample.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in it's own container.
Asbestos was analysed by Approved Identifier: Joshua Lim
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Douglas Partners
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CHAIN OF CUSTODY

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200

Project Name: Environmental Assessment
Project No: 45996.01 Sampler: Jessica Derrien
Project Mgr: PG Mob. Phone: 0418 274 129
Email: Jessica.derrien@douglaspartners.com.au
Date Required: standard Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Job No: 26426
Date received: 9/2/09
Time received: 4
Received by: SC
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/TPH	OPs/PCBs / 4 OPP	PAH	Phenols	VOCs	Other: Asbestos	Notes: cyanide.
1/0-0.5		1	6/2/09	S	G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
2/0.7-1.0		2	4/2/09											✓		✓	✓	✓	✓
2/3.2-3.5		3	4/2/09										✓						
4/0.3-0.5		4	4/2/09										✓					✓	
5/0.3-0.5		5	4/2/09										✓	✓		✓		✓	✓
6/0-0.1		6	4/2/09															✓	
6/1.2-1.5		7	4/2/09										✓						
7/0.7-1.0		8	4/2/09										✓	✓		✓	✓	✓	✓
8/1.2-1.5		9	4/2/09															✓	
8/2.7-3.0		10	4/2/09										✓	✓		✓			✓
12/0-0.1		11	6/2/09										✓	✓		✓		✓	✓
13/3.7-4.0		12	4/2/09										✓					✓	

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by: J. Derrien Signed: Date & Time: 9/2/09 11:45 m. Received By: Simon Cong Date & Time: 9/2/09 4pm

Relinquished by: Signed: Date & Time: Received By: Date & Time:

Douglas Partners
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CHAIN OF CUSTODY

Project Name: Environmental Assessment
Project No: 45996.01 Sampler: Jessica Derrien
Project Mgr: PG Mob. Phone:0418 274 129
Email: Jessica.derrien@douglaspartners.com.au
Date Required: standard Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other: Asbestos	Notes: Cyanide
14/0.2-0.5		13	3/2/09	S	G	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	
15/0.2-0.5		14	3/2/09			✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	
16/0.2-0.5		15	3/2/09			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
BD1/03/2009		16	4/2/09			✓	✓	✓	✓	✓	✓	✓			✓				
Trip Spike		17	4-6/2/09																
Trip Blank		18	4-6/2/09																
3/0.3-0.5		19	4/2/09			✓	✓	✓	✓	✓	✓	✓	✓		✓	[illegible]		✓	
3/1.7-2.0		20	4/2/09			✓	✓	✓	✓	✓	✓	✓			✓				

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114 Phone: (02) 9809 0666 Fax: (02) 9809 4095
Relinquished by: J. Derrien Signed: Date & Time: 9/2/09 11am. Received By: SS Date & Time:
Relinquished by: Signed: Date & Time: Received By: Date & Time:

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 26426-A

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**45996.01**
No. of samples:	Additional Testing on 6 Soils
Date samples received:	09/02/09
Date completed instructions received:	16/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	23/02/09
Date of Preliminary Report:	Not Issued
Issue Date:	20/02/09

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst
Operations Manager

Metals in TCLP Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-A-1 1/0-0.5 6/02/2009 Soil	26426-A-4 4/0.3-0.5 4/02/2009 Soil	26426-A-8 7/0.7-1.0 5/02/2009 Soil	26426-A-10 8/2.7-3.0 5/02/2009 Soil	26426-A-15 16/0.2-0.5 5/02/2009 Soil
Date extracted	-	17/02/2009	17/02/2009	17/02/2009	17/02/2009	17/02/2009
Date analysed	-	[NA]	20/02/2009	20/02/2009	20/02/2009	20/02/2009
pH of soil for fluid# determ.	pH units	9.20	9.10	9.30	9.00	9.20
pH of soil for fluid # determ. (acid)	pH units	1.40	1.30	1.30	1.40	1.30
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	6.20	5.10	5.40	5.20	5.10
Lead in TCLP	mg/L	[NA]	0.080	1.1	0.89	0.10

Metals in TCLP Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26426-A-19 3/0.3-0.5 4/02/2009 Soil
Date extracted	-	17/02/2009
Date analysed	-	20/02/2009
pH of soil for fluid# determ.	pH units	9.00
pH of soil for fluid # determ. (acid)	pH units	1.20
Extraction fluid used	-	1
pH of final Leachate	pH units	5.00
Lead in TCLP	mg/L	0.090

PAHs in TCLP (USEPA 1311) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26426-A-1 1/0-0.5 6/02/2009 Soil	26426-A-4 4/0.3-0.5 4/02/2009 Soil	26426-A-15 16/0.2-0.5 5/02/2009 Soil	26426-A-19 3/0.3-0.5 4/02/2009 Soil
Date extracted	-	18/02/2009	18/02/2009	18/02/2009	18/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	0.001	<0.001	0.002	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(b+k)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Surrogate p-Terphenyl-d_{14}	%	100	109	111	117

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
GC.12 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC.12	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL Metals in TCLP	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/02/2009	[NT]	[NT]	LCS-W1	17/02/09
Date analysed	-			20/02/09	[NT]	[NT]	LCS-W1	20/02/09
Lead in TCLP	mg/L	0.03	Metals.20 ICP-AES	<0.030	[NT]	[NT]	LCS-W1	100%

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			18/02/09	[NT]	[NT]	LCS-W1	18/02/09
Date analysed	-			19/02/09	[NT]	[NT]	LCS-W1	19/02/09
Naphthalene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	87%
Acenaphthylene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	90%
Phenanthrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	88%
Anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	87%
Pyrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	90%
Benzo(a)anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	97%
Benzo(b+k)fluoranthene in TCLP	mg/L	0.002	GC.12 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	90%
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12	93	[NT]	[NT]	LCS-W1	106%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Aileen Hie

From: Jessica Derrien [Jessica.Derrien@douglaspartners.com.au]
Sent: Monday, 16 February 2009 11:24 AM
To: David Springer
Cc: Aileen Hie
Subject: RE: Results for registration '26426 - 45996.01'

Hi David,

Could you schedule the following TCLP Analysis ion standard TAT?

-1 • 1/0.0-0.5 for PAH;
-19 • 3/0.3-0.5 for lead and PAH;
-4 • 4/0.3-0.5 for lead and PAH;
-8 • 7/0.7-1.0 for lead;
-10 • 8/2.7-3.0 for lead; and
-16 • 16/0.2-0.5 for lead and PAH

Envirolab Ref: 26426A
Due: 23/2/09
Std 5 day TAT.

Thanking you in advance.

Jessica Derrien | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0620 | F: 02 9809 4095 | M: 0418 274 129 | E: Jessica.Derrien@douglaspartners.com.au

From: David Springer [mailto:DSpringer@envirolabservices.com.au]
Sent: Friday, 13 February 2009 5:13 PM
To: Jessica Derrien
Subject: Results for registration '26426 - 45996.01'

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the Invoice
a copy of the COC
an excel file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
Joshua Lim on jlim@envirolabservices.com.au
or
David Springer on dspringer@envirolabservices.com.au
or
Tania Notaras on tnotaras@envirolabservices.com.au

Regards

16/02/2009

Envirolab Services
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
www.envirolabservices.com.au

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CERTIFICATE OF ANALYSIS 26431

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**45996.01, Environmental Assessment**
No. of samples:	4 Soils
Date samples received:	10/02/09
Date completed instructions received:	10/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	18/02/09
Date of Preliminary Report:	Not Issued
Issue Date:	17/02/09

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Results Approved By:

David Springer
Business Development & Quality Manager

sPOCAS Our Reference: Your Reference Type of sample	UNITS ---------- ----------	26431-1 13/1.2-2.0 Soil	26431-2 14/0.7-1.0 Soil	26431-3 14/1.7-2.0 Soil	26431-4 14/3.2-3.5 Soil
Date prepared	-	12/02/2009	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	12/02/2009	12/02/2009	12/02/2009	12/02/2009
pH $_{kcl}$	pH units	6.1	4.5	5.8	4.8
TAA pH 6.5	moles H^+/t	<5	27	5	10
s-TAA pH 6.5	%w/w S	<0.01	0.044	<0.01	0.016
pH $_{ox}$	pH units	5.8	4.5	4.4	4.0
TPA pH 6.5	moles H^+/t	<5.0	<5.0	<5.0	7.5
s-TPA pH 6.5	%w/w S	<0.01	<0.01	<0.01	0.012
TSA pH 6.5	moles H^+/t	<5.0	<5.0	<5.0	<5.0
s-TSA pH 6.5	%w/w S	<0.01	<0.01	<0.01	<0.01
ANCE	% $CaCO_3$	<0.05	<0.05	<0.05	<0.05
a-ANCE	moles H^+/t	<5	<5	<5	<5
s-ANCE	%w/w S	<0.05	<0.05	<0.05	<0.05
S_{KCl}	%w/w S	0.007	0.005	<0.005	<0.005
S_P	%w/w	0.063	0.016	0.034	0.009
S_{POS}	%w/w	0.056	0.011	0.030	0.008
a-S_{POS}	moles H^+/t	35	7.0	19	<5.0
Ca_{KCl}	%w/w	0.15	0.091	0.14	0.053
Ca_P	%w/w	0.17	0.093	0.19	0.055
Ca_A	%w/w	0.019	<0.005	0.055	<0.005
Mg_{KCl}	%w/w	0.009	0.010	0.015	0.026
Mg_P	%w/w	0.010	0.010	0.017	0.027
Mg_A	%w/w	<0.005	<0.005	<0.005	<0.005
SRAS	%w/w	<0.005	<0.005	<0.005	<0.005
S_{HCl}	%w/w S	0.011	0.008	<0.005	<0.005
S_{NAS}	%w/w S	<0.005	<0.005	<0.005	<0.005
a-S_{NAS}	moles H^+/t	<5	<5	<5	<5
s-S_{NAS}	%w/w S	<0.01	<0.01	<0.01	<0.01
a-Net Acidity	moles H^+/t	38	35	24	15
Liming rate	kg $CaCO_3$/t	2.8	2.6	1.8	1.1
a-Net Acidity without ANCE	moles H^+/t	NA	NA	NA	NA
Liming rate without ANCE	kg $CaCO_3$/t	NA	NA	NA	NA

Method ID	Methodology Summary
LAB.64	sPOCAS determined using titrimetric and ICP-AES techniques. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL sPOCAS	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			12/2/09	26431-1	12/02/2009 || 12/02/2009	LCS	12/2/09
Date analysed	-			12/2/09	26431-1	12/02/2009 || 12/02/2009	LCS	12/2/09
pH kcl	pH units		LAB.64	5062.0	26431-1	6.1 || 6.1 || RPD: 0	LCS	101%
TAA pH 6.5	moles H^+/t	5	LAB.64	<5	26431-1	<5 || <5	LCS	117%
s-TAA pH 6.5	%w/w S	0.01	LAB.64	<0.01	26431-1	<0.01 || <0.01	LCS	120%
pH ox	pH units		LAB.64	3.6	26431-1	5.8 || 5.6 || RPD: 4	LCS	93%
TPA pH 6.5	moles H^+/t	5	LAB.64	<5.0	26431-1	<5.0 || <5.0	LCS	104%
s-TPA pH 6.5	%w/w S	0.01	LAB.64	<0.01	26431-1	<0.01 || <0.01	LCS	104%
TSA pH 6.5	moles H^+/t	5	LAB.64	<5.0	26431-1	<5.0 || <5.0	LCS	104%
s-TSA pH 6.5	%w/w S	0.01	LAB.64	<0.01	26431-1	<0.01 || <0.01	LCS	105%
ANCe	% $CaCO_3$	0.05	LAB.64	<0.05	26431-1	<0.05 || <0.05	[NR]	[NR]
a-ANCe	moles H^+/t	5	LAB.64	<5	26431-1	<5 || <5	[NR]	[NR]
s-ANCe	%w/w S	0.05	LAB.64	<0.05	26431-1	<0.05 || <0.05	[NR]	[NR]
Skcl	%w/w S	0.005	LAB.64	<0.005	26431-1	0.007 || 0.011 || RPD: 44	LCS	111%
Sp	%w/w	0.005	LAB.64	<0.005	26431-1	0.063 || 0.061 || RPD: 3	LCS	103%
Spos	%w/w	0.005	LAB.64	<0.005	26431-1	0.056 || 0.050 || RPD: 11	LCS	101%
a-Spos	moles H^+/t	5	LAB.64	<5.0	26431-1	35 || 31 || RPD: 12	LCS	101%
Cakcl	%w/w	0.005	LAB.64	<0.005	26431-1	0.15 || 0.16 || RPD: 6	LCS	95%
Cap	%w/w	0.005	LAB.64	<0.005	26431-1	0.17 || 0.17 || RPD: 0	LCS	90%
Caa	%w/w	0.005	LAB.64	<0.005	26431-1	0.019 || 0.010 || RPD: 62	[NR]	[NR]
Mgkcl	%w/w	0.005	LAB.64	<0.005	26431-1	0.009 || 0.009 || RPD: 0	LCS	100%
Mgp	%w/w	0.005	LAB.64	<0.005	26431-1	0.010 || 0.009 || RPD: 11	LCS	89%
Mga	%w/w	0.005	LAB.64	<0.005	26431-1	<0.005 || <0.005	[NR]	[NR]
SRAS	%w/w	0.005	LAB.64	<0.005	26431-1	<0.005 || <0.005	[NR]	[NR]
Shcl	%w/w S	0.005	LAB.64	<0.005	26431-1	0.011 || 0.007 || RPD: 44	LCS	119%
Snas	%w/w S	0.005	LAB.64	<0.005	26431-1	<0.005 || <0.005	[NR]	[NR]
a-Snas	moles H^+/t	5	LAB.64	<5	26431-1	<5 || <5	[NR]	[NR]
s-Snas	%w/w S	0.01	LAB.64	<0.01	26431-1	<0.01 || <0.01	[NR]	[NR]
a-Net Acidity	moles H^+/t	10	LAB.64	<10	26431-1	38 || 33 || RPD: 14	LCS	102%
Liming rate	kg $CaCO_3$ /t	0.75	LAB.64	<0.75	26431-1	2.8 || 2.5 || RPD: 11	LCS	102%

QUALITY CONTROL sPOCAS	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
a-Net Acidity without ANCE	moles H^+/t	10	LAB.64	<10	26431-1	NA || NA	[NR]	[NR]
Liming rate without ANCE	kg $CaCO_3$/t	0.75	LAB.64	<0.75	26431-1	NA || NA	[NR]	[NR]

Report Comments:

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RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

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Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Environmental Assessment
Project No: 45996.01 Sampler: Jessica Derrien
Project Mgr: P.G Mob. Phone:0418 274 129
Email: Jessica.derrien@douglaspartners.com.au
Date Required: standard Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200

Job No: 26431
Date received: 10/2/09
Time received: 10:00
Received by: JTi'e
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other: SPOCAS.	Notes
13/1.7-2.0		1																✓	
14/0.7-1.0		2																✓	
14/1.7-2.0		3																✓	
14/3.0-3.5		4																✓	

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114 Phone: (02) 9809 0666 Fax: (02) 9809 4095

Relinquished by: J. Derrien	Signed:	Date & Time: 10/2/09 9:30am	Received By:	Date & Time: 10/2/09	10:00
Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:	

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26479

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**45996.01, Chippendale UTS**
No. of samples:	3 Waters
Date samples received:	11/02/09
Date completed instructions received:	11/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
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Report Details:

Date results requested by:	18/02/09
Date of Preliminary Report:	Not issued
Issue Date:	17/02/09

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Results Approved By:

David Springer
Business Development & Quality Manager

ACCREDITED FOR TECHNICAL COMPETENCE

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	14/02/2009	14/02/2009	14/02/2009
Date analysed	-	14/02/2009	14/02/2009	14/02/2009
Dichlorodifluoromethane	µg/L	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10
1,1-Dichloroethene	µg/L	<1.0	<1.0	<1.0
Trans-1,2-dichloroethene	µg/L	<1.0	<1.0	<1.0
1,1-dichloroethane	µg/L	<1.0	<1.0	<1.0
Cis-1,2-dichloroethene	µg/L	<1.0	<1.0	<1.0
Bromochloromethane	µg/L	<1.0	<1.0	<1.0
Chloroform	µg/L	<1.0	<1.0	<1.0
2,2-dichloropropane	µg/L	<1.0	<1.0	<1.0
1,2-dichloroethane	µg/L	<1.0	<1.0	<1.0
1,1,1-trichloroethane	µg/L	<1.0	<1.0	<1.0
1,1-dichloropropene	µg/L	<1.0	<1.0	<1.0
Carbon tetrachloride	µg/L	<1.0	<1.0	<1.0
Benzene	µg/L	<1.0	<1.0	<1.0
Dibromomethane	µg/L	<1.0	<1.0	<1.0
1,2-dichloropropane	µg/L	<1.0	<1.0	<1.0
Trichloroethene	µg/L	<1.0	<1.0	<1.0
Bromodichloromethane	µg/L	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	µg/L	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	µg/L	<1.0	<1.0	<1.0
1,1,2-trichloroethane	µg/L	<1.0	<1.0	<1.0
Toluene	µg/L	<1.0	<1.0	<1.0
1,3-dichloropropane	µg/L	<1.0	<1.0	<1.0
Dibromochloromethane	µg/L	<1.0	<1.0	<1.0
1,2-dibromoethane	µg/L	<1.0	<1.0	<1.0
Tetrachloroethene	µg/L	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	µg/L	<1.0	<1.0	<1.0
Chlorobenzene	µg/L	<1.0	<1.0	<1.0
Ethylbenzene	µg/L	<1.0	<1.0	<1.0
Bromoform	µg/L	<1.0	<1.0	<1.0
m+p-xylene	µg/L	<2.0	<2.0	<2.0
Styrene	µg/L	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	µg/L	<1.0	<1.0	<1.0
o-xylene	µg/L	<1.0	<1.0	<1.0

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
1,2,3-trichloropropane*	µg/L	<1.0	<1.0	<1.0
Isopropylbenzene	µg/L	<1.0	<1.0	<1.0
Bromobenzene	µg/L	<1.0	<1.0	<1.0
n-propyl benzene	µg/L	<1.0	<1.0	<1.0
2-chlorotoluene	µg/L	<1.0	<1.0	<1.0
4-chlorotoluene	µg/L	<1.0	<1.0	<1.0
1,3,5-trimethyl benzene	µg/L	<1.0	<1.0	<1.0
Tert-butyl benzene	µg/L	<1.0	<1.0	<1.0
1,2,4-trimethyl benzene	µg/L	<1.0	<1.0	<1.0
1,3-dichlorobenzene	µg/L	<1.0	<1.0	<1.0
Sec-butyl benzene	µg/L	<1.0	<1.0	<1.0
1,4-dichlorobenzene	µg/L	<1.0	<1.0	<1.0
4-isopropyl toluene	µg/L	<1.0	<1.0	<1.0
1,2-dichlorobenzene	µg/L	<1.0	<1.0	<1.0
n-butyl benzene	µg/L	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	µg/L	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	µg/L	<1.0	<1.0	<1.0
Hexachlorobutadiene	µg/L	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	µg/L	<1.0	<1.0	<1.0
Surrogate Dibromofluoromethane	%	97	91	92
Surrogate toluene-d8	%	84	83	83
Surrogate 4-BFB	%	74	74	75

vTPH & BTEX in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	14/02/2009	14/02/2009	14/02/2009
Date analysed	-	14/02/2009	14/02/2009	14/02/2009
TPH C_6 - C_9	µg/L	<10	<10	<10
Benzene	µg/L	<1.0	<1.0	<1.0
Toluene	µg/L	<1.0	<1.0	<1.0
Ethylbenzene	µg/L	<1.0	<1.0	<1.0
m+p-xylene	µg/L	<2.0	<2.0	<2.0
o-xylene	µg/L	<1.0	<1.0	<1.0
Surrogate Dibromofluoromethane	%	97	91	92
Surrogate toluene-d8	%	84	83	83
Surrogate 4-BFB	%	74	74	75

sTPH in Water (C10-C36) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	12/02/2009	12/02/2009	12/02/2009
TPH C_{10} - C_{14}	µg/L	<50	<50	<50
TPH C_{15} - C_{28}	µg/L	<100	<100	<100
TPH C_{29} - C_{36}	µg/L	<100	<100	<100
Surrogate o-Terphenyl	%	96	98	86

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	13/02/2009	13/02/2009	13/02/2009
Naphthalene	µg/L	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1
Fluorene	µg/L	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1
Anthracene	µg/L	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1
Pyrene	µg/L	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1
Chrysene	µg/L	<1	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1
Surrogate p-Terphenyl-d_{14}	%	97	102	114

OCP in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	12/02/2009	12/02/2009	12/02/2009
HCB	µg/L	<0.2	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2
DDT	µg/L	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2
Surrogate TCLMX	%	109	98	98

OP Pesticides in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	12/02/2009	12/02/2009	12/02/2009
Diazinon	µg/L	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2
Surrogate TCLMX	%	109	98	98

PCBs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	12/02/2009	12/02/2009	12/02/2009
Arochlor 1016	µg/L	<2	<2	<2
Arochlor 1232	µg/L	<2	<2	<2
Arochlor 1242	µg/L	<2	<2	<2
Arochlor 1248	µg/L	<2	<2	<2
Arochlor 1254	µg/L	<2	<2	<2
Arochlor 1260	µg/L	<2	<2	<2
Surrogate TCLMX	%	109	98	98

Total Phenolics in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date extracted	-	12/02/2009	12/02/2009	12/02/2009
Date analysed	-	13/02/2009	13/02/2009	13/02/2009
Total Phenolics (as Phenol)	mg/L	<0.050	<0.050	<0.050

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date prepared	-	16/02/2009	16/02/2009	16/02/2009
Date analysed	-	17/02/2009	17/02/2009	17/02/2009
Arsenic-Dissolved	µg/L	<1.0	<1.0	<1.0
Cadmium-Dissolved	µg/L	<0.10	0.20	<0.10
Chromium-Dissolved	µg/L	<1.0	<1.0	<1.0
Copper-Dissolved	µg/L	<1.0	<1.0	<1.0
Lead-Dissolved	µg/L	<1.0	<1.0	<1.0
Mercury-Dissolved	µg/L	<0.50	<0.50	<0.50
Nickel-Dissolved	µg/L	1.6	1.0	1.0
Zinc-Dissolved	µg/L	13	21	11

Miscellaneous Inorganics Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26479-1 GW7 10/02/2009 Water	26479-2 GW8 10/02/2009 Water	26479-3 BD1/100209 10/02/2009 Water
Date prepared	-	16/02/2009	16/02/2009	16/02/2009
Date analysed	-	16/02/2009	16/02/2009	16/02/2009
Calcium - Dissolved	mg/L	21	150	150
Magnesium - Dissolved	mg/L	14	13	13
Hardness by calculation	mgCaCO3/L	110	430	430

Method ID	Methodology Summary
GC.13	Water samples are analysed directly by purge and trap GC-MS.
GC.16	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC.8	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.30	Total Phenolics - determined colorimetrically following disitillation.
Metals.22 ICP-MS	Determination of various metals by ICP-MS.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
Date analysed	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
Dichlorodifluoromethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	102%
Cis-1,2-dichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	102%
2,2-dichloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	107%
1,1,1-trichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	103%
1,1-dichloropropene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	137%
Bromodichloromethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	103%
trans-1,3-dichloropropene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	103%
1,2-dibromoethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	94%
1,1,1,2-tetrachloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	GC.13	<2.0	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
o-xylene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane*	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		GC.13	78	[NT]	[NT]	LCS-W1	103%
Surrogate toluene-d8	%		GC.13	97	[NT]	[NT]	LCS-W1	97%
Surrogate 4-BFB	%		GC.13	86	[NT]	[NT]	LCS-W1	98%

QUALITY CONTROL vTPH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
Date analysed	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
TPH C_6 - C_9	µg/L	10	GC.16	<10	[NT]	[NT]	LCS-W1	102%
Benzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	105%
Toluene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	94%
Ethylbenzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	83%
m+p-xylene	µg/L	2	GC.16	<2.0	[NT]	[NT]	LCS-W1	113%
o-xylene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	118%
Surrogate Dibromofluoromethane	%		GC.16	78	[NT]	[NT]	LCS-W1	94%
Surrogate toluene-d8	%		GC.16	97	[NT]	[NT]	LCS-W1	91%
Surrogate 4-BFB	%		GC.16	86	[NT]	[NT]	LCS-W1	94%

QUALITY CONTROL sTPH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Date analysed	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
TPH C_{10} - C_{14}	µg/L	50	GC.3	<50	[NT]	[NT]	LCS-W1	140%
TPH C_{15} - C_{28}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	140%
TPH C_{29} - C_{36}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	140%
Surrogate o-Terphenyl	%		GC.3	116	[NT]	[NT]	LCS-W1	88%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Date analysed	-			13/02/09	[NT]	[NT]	LCS-W1	13/02/09
Naphthalene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	72%
Acenaphthylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	76%
Phenanthrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	75%
Anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	74%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	77%
Benzo(a)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	80%
Benzo(b+k)fluoranthene	µg/L	2	GC.12 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	79%
Indeno(1,2,3-c,d)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	97	[NT]	[NT]	LCS-W1	86%

QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Date analysed	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
HCB	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	119%
gamma-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	90%
Heptachlor	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	114%
delta-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	117%
Heptachlor Epoxide	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	117%
gamma-Chlordane	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	109%
Dieldrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	111%
Endrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	122%
pp-DDD	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	105%
Endosulfan II	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
DDT	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	113%
Methoxychlor	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-5	113	[NT]	[NT]	LCS-W1	111%

QUALITY CONTROL OP Pesticides in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Date analysed	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Diazinon	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Dimethoate	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Ronnel	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	LCS-W1	70%
Fenitrothion	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	LCS-W1	74%
Bromophos ethyl	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Ethion	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	LCS-W1	62%
Surrogate TCLMX	%		GC.8	113	[NT]	[NT]	LCS-W1	110%

QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Date analysed	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Arochlor 1016	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	GC-6	<2	[NT]	[NT]	LCS-W1	125%
Arochlor 1260	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-6	113	[NT]	[NT]	LCS-W1	142%

QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/02/2009	[NT]	[NT]	LCS-W1	12/02/2009
Date analysed	-			13/02/09	[NT]	[NT]	LCS-W1	13/02/09
Total Phenolics (as Phenol)	mg/L	0.05	LAB.30	<0.050	[NT]	[NT]	LCS-W1	95%

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			16/2/09	[NT]	[NT]	LCS-W1	16/2/09
Date analysed	-			17/2/09	[NT]	[NT]	LCS-W1	17/2/09
Arsenic-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	100%
Cadmium-Dissolved	µg/L	0.1	Metals.22 ICP-MS	<0.10	[NT]	[NT]	LCS-W1	104%
Chromium-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	101%
Copper-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	94%
Lead-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	105%
Mercury-Dissolved	µg/L	0.5	Metals.21 CV-AAS	<0.50	[NT]	[NT]	LCS-W1	107%
Nickel-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	95%
Zinc-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	91%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			16/02/09	[NT]	[NT]	LCS-W1	16/02/09
Date analysed	-			16/02/09	[NT]	[NT]	LCS-W1	16/02/09
Calcium - Dissolved	mg/L	0.03	Metals.20 ICP-AES	<0.030	[NT]	[NT]	LCS-W1	91%
Magnesium - Dissolved	mg/L	0.03	Metals.20 ICP-AES	<0.030	[NT]	[NT]	LCS-W1	87%
Hardness by calculation	mgCaCO3/L	1	Metals.20 ICP-AES	<1	[NT]	[NT]	[NR]	[NR]

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Douglas Partners
Geotechnics - Environment - Groundwater

CHAIN OF CUSTODY

Project Name: CHIPPENDALE UTS – Environmental Assessment
Project No: 45996-01 Sampler: WFY/ZS
Project Mgr: PG Mob. Phone: 0402 957 137
Email: w...fe...jessica.derrien@douglaspartners.com.au
Date Required: Standard Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: Heavy Metals	BTEX/ TPH	OCPs/ OPP PCBs	PAH	Phenols	Asbestos	VOC	Hardness					Other	Notes
GW7	–	1	10.02.09	W	G/P	✓	✓	✓	✓	✓		✓	✓						
GW8	↓	2	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓						
BD1/100209	↓	3	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓						

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200

Job No: 26479
Date received: 11/2/09
Time received: 9
Received by: SS
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by: JMD Signed: PP. Date & Time: 11.02.09/10:30am Received By: Simon Sorg Date & Time: 11/2/09
Relinquished by: Signed: Date & Time: Received By: Date & Time:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26550

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**45996.01, Chippingdale (UTS)**
No. of samples:	2 Waters
Date samples received:	12/02/09
Date completed instructions received:	12/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	19/02/09
Date of Preliminary Report:	Not Issued
Issue Date:	19/02/09

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Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst
Operations Manager

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date extracted	-	14/02/2009	14/02/2009
Date analysed	-	14/02/2009	14/02/2009
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1.0	<1.0
Trans-1,2-dichloroethene	µg/L	<1.0	<1.0
1,1-dichloroethane	µg/L	<1.0	<1.0
Cis-1,2-dichloroethene	µg/L	<1.0	<1.0
Bromochloromethane	µg/L	<1.0	<1.0
Chloroform	µg/L	<1.0	<1.0
2,2-dichloropropane	µg/L	<1.0	<1.0
1,2-dichloroethane	µg/L	<1.0	<1.0
1,1,1-trichloroethane	µg/L	<1.0	<1.0
1,1-dichloropropene	µg/L	<1.0	<1.0
Carbon tetrachloride	µg/L	<1.0	<1.0
Benzene	µg/L	<1.0	<1.0
Dibromomethane	µg/L	<1.0	<1.0
1,2-dichloropropane	µg/L	<1.0	<1.0
Trichloroethene	µg/L	<1.0	<1.0
Bromodichloromethane	µg/L	<1.0	<1.0
trans-1,3-dichloropropene	µg/L	<1.0	<1.0
cis-1,3-dichloropropene	µg/L	<1.0	<1.0
1,1,2-trichloroethane	µg/L	<1.0	<1.0
Toluene	µg/L	<1.0	<1.0
1,3-dichloropropane	µg/L	<1.0	<1.0
Dibromochloromethane	µg/L	<1.0	<1.0
1,2-dibromoethane	µg/L	<1.0	<1.0
Tetrachloroethene	µg/L	<1.0	<1.0
1,1,1,2-tetrachloroethane	µg/L	<1.0	<1.0
Chlorobenzene	µg/L	<1.0	<1.0
Ethylbenzene	µg/L	<1.0	<1.0
Bromoform	µg/L	<1.0	<1.0
m+p-xylene	µg/L	<2.0	<2.0
Styrene	µg/L	<1.0	<1.0
1,1,2,2-tetrachloroethane	µg/L	<1.0	<1.0
o-xylene	µg/L	<1.0	<1.0

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
1,2,3-trichloropropane*	µg/L	<1.0	<1.0
Isopropylbenzene	µg/L	<1.0	<1.0
Bromobenzene	µg/L	<1.0	<1.0
n-propyl benzene	µg/L	<1.0	<1.0
2-chlorotoluene	µg/L	<1.0	<1.0
4-chlorotoluene	µg/L	<1.0	<1.0
1,3,5-trimethyl benzene	µg/L	<1.0	<1.0
Tert-butyl benzene	µg/L	<1.0	<1.0
1,2,4-trimethyl benzene	µg/L	<1.0	<1.0
1,3-dichlorobenzene	µg/L	<1.0	<1.0
Sec-butyl benzene	µg/L	<1.0	<1.0
1,4-dichlorobenzene	µg/L	<1.0	<1.0
4-isopropyl toluene	µg/L	<1.0	<1.0
1,2-dichlorobenzene	µg/L	<1.0	<1.0
n-butyl benzene	µg/L	<1.0	<1.0
1,2-dibromo-3-chloropropane	µg/L	<1.0	<1.0
1,2,4-trichlorobenzene	µg/L	<1.0	<1.0
Hexachlorobutadiene	µg/L	<1.0	<1.0
1,2,3-trichlorobenzene	µg/L	<1.0	<1.0
Surrogate Dibromofluoromethane	%	92	90
Surrogate toluene-d8	%	84	83
Surrogate 4-BFB	%	74	77

vTPH & BTEX in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date extracted	-	14/02/2009	14/02/2009
Date analysed	-	14/02/2009	14/02/2009
TPH C_6 - C_9	µg/L	<10	<10
Benzene	µg/L	<1.0	<1.0
Toluene	µg/L	<1.0	<1.0
Ethylbenzene	µg/L	<1.0	<1.0
m+p-xylene	µg/L	<2.0	<2.0
o-xylene	µg/L	<1.0	<1.0
Surrogate Dibromofluoromethane	%	92	90
Surrogate toluene-d8	%	84	83
Surrogate 4-BFB	%	74	77

sTPH in Water (C10-C36) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date extracted	-	16/02/2009	16/02/2009
Date analysed	-	16/02/2009	16/02/2009
TPH C_{10} - C_{14}	µg/L	80	63
TPH C_{15} - C_{28}	µg/L	120	100
TPH C_{29} - C_{36}	µg/L	<100	<100
Surrogate o-Terphenyl	%	112	105

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date extracted	-	16/02/2009	16/02/2009
Date analysed	-	16/02/2009	16/02/2009
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Surrogate p-Terphenyl-d_{14}	%	109	111

OCP in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date extracted	-	16/02/2009	16/02/2009
Date analysed	-	16/02/2009	16/02/2009
HCB	µg/L	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
DDT	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCLMX	%	98	93

OP Pesticides in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date extracted	-	16/02/2009	16/02/2009
Date analysed	-	16/02/2009	16/02/2009
Diazinon	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Surrogate TCLMX	%	98	93

PCBs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date extracted	-	16/02/2009	16/02/2009
Date analysed	-	16/02/2009	16/02/2009
Arochlor 1016	µg/L	<2	<2
Arochlor 1232	µg/L	<2	<2
Arochlor 1242	µg/L	<2	<2
Arochlor 1248	µg/L	<2	<2
Arochlor 1254	µg/L	<2	<2
Arochlor 1260	µg/L	<2	<2
Surrogate TCLMX	%	98	93

Total Phenolics in Water			
Our Reference:	UNITS	26550-1	26550-2
Your Reference	----------	GW1	GW4
Date Sampled	----------	12/02/2009	12/02/2009
Type of sample		Water	Water
Date extracted	-	16/02/2009	16/02/2009
Date analysed	-	17/02/2009	17/02/2009
Total Phenolics (as Phenol)	mg/L	<0.050	<0.050

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date prepared	-	17/02/2009	17/02/2009
Date analysed	-	17/02/2009	17/02/2009
Arsenic-Dissolved	µg/L	<1.0	2.1
Cadmium-Dissolved	µg/L	<0.10	<0.10
Chromium-Dissolved	µg/L	<1.0	<1.0
Copper-Dissolved	µg/L	2.4	<1.0
Lead-Dissolved	µg/L	<1.0	<1.0
Mercury-Dissolved	µg/L	<0.50	<0.50
Nickel-Dissolved	µg/L	11	<1.0
Zinc-Dissolved	µg/L	18	15

Miscellaneous Inorganics Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26550-1 GW1 12/02/2009 Water	26550-2 GW4 12/02/2009 Water
Date prepared	-	17/02/2009	17/02/2009
Date analysed	-	17/02/2009	17/02/2009
Calcium - Dissolved	mg/L	12	32
Magnesium - Dissolved	mg/L	24	10
Hardness by calculation	mgCaCO3 /L	130	120

Method ID	Methodology Summary
GC.13	Water samples are analysed directly by purge and trap GC-MS.
GC.16	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC.8	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.30	Total Phenolics - determined colorimetrically following disitillation.
Metals.22 ICP-MS	Determination of various metals by ICP-MS.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
Date analysed	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
Dichlorodifluoromethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	GC.13	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	102%
Cis-1,2-dichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	102%
2,2-dichloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	107%
1,1,1-trichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	103%
1,1-dichloropropene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	137%
Bromodichloromethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	103%
trans-1,3-dichloropropene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	103%
1,2-dibromoethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	GC.13	<1.0	[NT]	[NT]	LCS-W1	94%
1,1,1,2-tetrachloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	GC.13	<2.0	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
o-xylene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane*	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	GC.13	<1.0	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		GC.13	78	[NT]	[NT]	LCS-W1	103%
Surrogate toluene-d8	%		GC.13	97	[NT]	[NT]	LCS-W1	97%
Surrogate 4-BFB	%		GC.13	86	[NT]	[NT]	LCS-W1	98%

QUALITY CONTROL vTPH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
Date analysed	-			14/02/09	[NT]	[NT]	LCS-W1	14/02/09
TPH C_6 - C_9	µg/L	10	GC.16	<10	[NT]	[NT]	LCS-W1	102%
Benzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	105%
Toluene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	94%
Ethylbenzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	83%
m+p-xylene	µg/L	2	GC.16	<2.0	[NT]	[NT]	LCS-W1	113%
o-xylene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	118%
Surrogate Dibromofluoromethane	%		GC.16	78	[NT]	[NT]	LCS-W1	94%
Surrogate toluene-d8	%		GC.16	97	[NT]	[NT]	LCS-W1	91%
Surrogate 4-BFB	%		GC.16	86	[NT]	[NT]	LCS-W1	94%

QUALITY CONTROL sTPH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2009	[NT]	[NT]	LCS-W1	16/02/2009
Date analysed	-			16/02/2009	[NT]	[NT]	LCS-W1	16/02/2009
TPH C_{10} - C_{14}	µg/L	50	GC.3	<50	[NT]	[NT]	LCS-W1	104%
TPH C_{15} - C_{28}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	91%
TPH C_{29} - C_{36}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	80%
Surrogate o-Terphenyl	%		GC.3	97	[NT]	[NT]	LCS-W1	96%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2009	[NT]	[NT]	LCS-W1	16/02/2009
Date analysed	-			16/02/2009	[NT]	[NT]	LCS-W1	16/02/2009
Naphthalene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	72%
Acenaphthylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	73%
Phenanthrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	71%
Anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Fluoranthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	71%
Pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	73%
Benzo(a)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	76%
Benzo(b+k)fluoranthene	µg/L	2	GC.12 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	74%
Indeno(1,2,3-c,d)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	106	[NT]	[NT]	LCS-W1	101%

QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/2/09	[NT]	[NT]	LCS-W1	16/2/09
Date analysed	-			16/2/09	[NT]	[NT]	LCS-W1	16/2/09
HCB	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	114%
gamma-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	95%
Heptachlor	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	113%
delta-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	109%
Heptachlor Epoxide	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	115%
gamma-Chlordane	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	111%
Dieldrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	110%
Endrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	120%
pp-DDD	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	115%
Endosulfan II	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
DDT	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	112%
Methoxychlor	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-5	88	[NT]	[NT]	LCS-W1	89%

QUALITY CONTROL OP Pesticides in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/2/09	[NT]	[NT]	LCS-W1	16/2/09
Date analysed	-			16/2/09	[NT]	[NT]	LCS-W1	16/2/09
Diazinon	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Dimethoate	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Ronnel	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	LCS-W1	129%
Fenitrothion	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	LCS-W1	73%
Bromophos ethyl	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	[NR]	[NR]
Ethion	µg/L	0.2	GC.8	<0.2	[NT]	[NT]	LCS-W1	105%
Surrogate TCLMX	%		GC.8	88	[NT]	[NT]	LCS-W1	88%

QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/2/09	[NT]	[NT]	LCS-W1	16/2/09
Date analysed	-			16/2/09	[NT]	[NT]	LCS-W1	16/2/09
Arochlor 1016	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	GC-6	<2	[NT]	[NT]	LCS-W1	101%
Arochlor 1260	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-6	88	[NT]	[NT]	LCS-W1	128%

QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2009	[NT]	[NT]	LCS-W1	16/02/2009
Date analysed	-			17/02/09	[NT]	[NT]	LCS-W1	17/02/09
Total Phenolics (as Phenol)	mg/L	0.05	LAB.30	<0.050	[NT]	[NT]	LCS-W1	99%

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/02/2009	[NT]	[NT]	LCS-W1	17/02/2009
Date analysed	-			17/02/2009	[NT]	[NT]	LCS-W1	17/02/2009
Arsenic-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	101%
Cadmium-Dissolved	µg/L	0.1	Metals.22 ICP-MS	<0.10	[NT]	[NT]	LCS-W1	103%

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chromium-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	100%
Copper-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	96%
Lead-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	105%
Mercury-Dissolved	µg/L	0.5	Metals.21 CV-AAS	<0.50	[NT]	[NT]	LCS-W1	110%
Nickel-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	95%
Zinc-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	96%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/02/2009	[NT]	[NT]	LCS-W1	17/02/09
Date analysed	-			17/02/2009	[NT]	[NT]	LCS-W1	17/02/09
Calcium - Dissolved	mg/L	0.03	Metals.20 ICP-AES	<0.030	[NT]	[NT]	LCS-W1	101%
Magnesium - Dissolved	mg/L	0.03	Metals.20 ICP-AES	<0.030	[NT]	[NT]	LCS-W1	99%
Hardness by calculation	mgCaCO3/L	1	Metals.20 ICP-AES	<1	[NT]	[NT]	[NR]	[NR]

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: CHIPPENDALE (UTS) Offices - Environmental Assessment
Project No: 45996-01 Sampler: WFY
Project Mgr: PG Mob. Phone: 0418 274129
Email: jessica.deren@douglas-partners.com.au
Date Required: standard Lab Quote No.:

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: Heavy Metals	BTEX/ TPH	OCPs/ OPPs PCBs	PAH	Phenols	Asbestos	VOC	Hardness					Other	Notes
GW1	–	1	12.02.09	W	P/G	✓	✓	✓	✓	✓		✓	✓						
GW4	–	2	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓						

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200

Job No: 26550
Date received: 12/2/09
Time received: 5:15
Received by: Jmie
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No.:
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:	12/2/09 5:15
Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:	

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26549

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrin

Sample log in details:

Your Reference:	**45996.01 Chippingdale UTS**
No. of samples:	5 Soils
Date samples received:	12/2/09
Date completed instructions received:	12/2/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	20/02/09
Date of Preliminary Report:	Not Issued
Issue Date:	18/02/09

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer
Business Development & Quality Manager

Matt Mansfield
Chemist

vTPH & BTEX in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	26549-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-2 BH 10 0-0.1 11/02/2009 Soil	26549-3 BH 11 0.2-0.5 11/02/2009 Soil
Date extracted	-	13/02/2009	13/02/2009	13/02/2009
Date analysed	-	14/02/2009	14/02/2009	15/02/2009
vTPH C_6 - C_9	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	104	92	95

sTPH in Soil (C10-C36) Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	26549-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-2 BH 10 0-0.1 11/02/2009 Soil	26549-3 BH 11 0.2-0.5 11/02/2009 Soil
Date extracted	-	13/02/2009	13/02/2009	13/02/2009
Date analysed	-	14/02/2009	14/02/2009	14/02/2009
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	350	150	920
TPH C_{29} - C_{36}	mg/kg	290	200	1,200
Surrogate o-Terphenyl	%	110	99	#

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	26549-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-2 BH 10 0-0.1 11/02/2009 Soil	26549-3 BH 11 0.2-0.5 11/02/2009 Soil	26549-4 BDA/110209 - 11/02/2009 Soil	26549-5 BDB/110209 - 11/02/2009 Soil
Date extracted	-	13/02/2009	13/02/2009	13/02/2009	13/02/2009	13/02/2009
Date analysed	-	14/02/2009	14/02/2009	14/02/2009	14/02/2009	14/02/2009
Naphthalene	mg/kg	0.2	<0.1	0.2	0.3	0.2
Acenaphthylene	mg/kg	1.1	0.5	2.6	1.9	2.4
Acenaphthene	mg/kg	0.1	<0.1	0.2	0.8	0.2
Fluorene	mg/kg	0.4	0.2	0.4	1.1	0.4
Phenanthrene	mg/kg	5.7	3.0	7.1	15	7.5
Anthracene	mg/kg	1.6	0.8	3.0	4.2	3.0
Fluoranthene	mg/kg	10	4.4	16	19	19
Pyrene	mg/kg	10	4.2	18	17	21
Benzo(a)anthracene	mg/kg	5.6	2.1	10	9.7	11
Chrysene	mg/kg	5.5	1.9	9.5	8.3	11
Benzo(b+k)fluoranthene	mg/kg	10	3.2	21	15	23
Benzo(a)pyrene	mg/kg	7.2	2.2	15	10	16
Indeno(1,2,3-c,d)pyrene	mg/kg	4.9	1.5	12	7.2	12
Dibenzo(a,h)anthracene	mg/kg	0.5	0.2	2.3	1.0	1.7
Benzo(g,h,i)perylene	mg/kg	4.6	1.3	11	6.3	11
Surrogate p-Terphenyl-d_{14}	%	71	70	72	72	74

Organochlorine Pesticides in soil				
Our Reference:	UNITS	26549-1	26549-2	26549-3
Your Reference	----------	BH 9	BH 10	BH 11
Depth	----------	0.2-0.5	0-0.1	0.2-0.5
Date Sampled		11/02/2009	11/02/2009	11/02/2009
Type of sample		Soil	Soil	Soil
Date extracted	-	13/02/2009	13/02/2009	13/02/2009
Date analysed	-	14/02/2009	14/02/2009	14/02/2009
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.4	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	100	95

Organophosphorus Pesticides Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	26549-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-2 BH 10 0-0.1 11/02/2009 Soil	26549-3 BH 11 0.2-0.5 11/02/2009 Soil
Date extracted	-	13/02/2009	13/02/2009	13/02/2009
Date analysed	-	14/02/2009	14/02/2009	14/02/2009
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	0.80	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	100	95

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	26549-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-2 BH 10 0-0.1 11/02/2009 Soil	26549-3 BH 11 0.2-0.5 11/02/2009 Soil
Date extracted	-	13/02/2009	13/02/2009	13/02/2009
Date analysed	-	14/02/2009	14/02/2009	14/02/2009
Arochlor 1016	mg/kg	<0.1	<0.1	<1
Arochlor 1232	mg/kg	<0.1	<0.1	<1
Arochlor 1242	mg/kg	<0.1	<0.1	<1
Arochlor 1248	mg/kg	<0.1	<0.1	<1
Arochlor 1254	mg/kg	<0.1	<0.1	<1
Arochlor 1260	mg/kg	<0.1	<0.1	<1
Surrogate TCLMX	%	101	100	95

Total Phenolics in Soil				
Our Reference:	UNITS	26549-1	26549-2	26549-3
Your Reference	----------	BH 9	BH 10	BH 11
Depth	----------	0.2-0.5	0-0.1	0.2-0.5
Date Sampled		11/02/2009	11/02/2009	11/02/2009
Type of sample		Soil	Soil	Soil
Date extracted	-	16/02/2009	16/02/2009	16/02/2009
Date analysed	-	16/02/2009	16/02/2009	16/02/2009
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0	<5.0

Acid Extractable metals in soil						
Our Reference:	UNITS	26549-1	26549-2	26549-3	26549-4	26549-5
Your Reference	----------	BH 9	BH 10	BH 11	BDA/110209	BDB/110209
Depth	----------	0.2-0.5	0-0.1	0.2-0.5	-	-
Date Sampled		11/02/2009	11/02/2009	11/02/2009	11/02/2009	11/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	14/02/2009	14/02/2009	14/02/2009	14/02/2009	14/02/2009
Date analysed	-	16/02/2009	16/02/2009	16/02/2009	16/02/2009	16/02/2009
Arsenic	mg/kg	4	<4	<4	4	<4
Cadmium	mg/kg	0.6	<0.5	<0.5	0.6	<0.5
Chromium	mg/kg	11	9	15	12	13
Copper	mg/kg	75	38	65	77	68
Lead	mg/kg	1,500	140	150	720	160
Mercury	mg/kg	0.3	0.2	0.4	0.4	0.5
Nickel	mg/kg	9	5	15	8	16
Zinc	mg/kg	500	140	140	460	140

Miscellaneous Inorg - soil		
Our Reference:	UNITS	26549-2
Your Reference	----------	BH 10
Depth	----------	0-0.1
Date Sampled		11/02/2009
Type of sample		Soil
Total Cyanide	mg/kg	<0.5

Moisture Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	26549-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-2 BH 10 0-0.1 11/02/2009 Soil	26549-3 BH 11 0.2-0.5 11/02/2009 Soil	26549-4 BDA/110209 - 11/02/2009 Soil	26549-5 BDB/110209 - 11/02/2009 Soil
Date prepared	-	13/02/2009	13/02/2009	13/02/2009	13/02/2009	13/02/2009
Date analysed	-	13/02/2009	13/02/2009	13/02/2009	13/02/2009	13/02/2009
Moisture	%	12	14	6.8	11	7.3

Asbestos ID - soils				
Our Reference:	UNITS	26549-1	26549-2	26549-3
Your Reference	----------	BH 9	BH 10	BH 11
Depth	----------	0.2-0.5	0-0.1	0.2-0.5
Date Sampled		11/02/2009	11/02/2009	11/02/2009
Type of sample		Soil	Soil	Soil
Date analysed	-	17/02/2009	17/02/2009	17/02/2009
Sample Description	-	30g Soil	30g Soil	30g Soil
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
GC.16	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC.8	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.30	Total Phenolics - determined colorimetrically following disitillation.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.13	Cyanide - determined colourimetrically, following distillation. Based on APHA 20th ED, 4500-CN_C,E.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB.1	Qualitative identification of asbestos type fibres in bulk using Polarised Light Microscopy and Dispersion Staining Techniques.

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/02/09	26549-1	13/02/2009 || 13/02/2009	LCS-4	13/02/09
Date analysed	-			14/02/09	26549-1	14/02/2009 || 14/02/2009	LCS-4	14/02/09
vTPH C_6 - C_9	mg/kg	25	GC.16	<25	26549-1	<25 || <25	LCS-4	129%
Benzene	mg/kg	0.5	GC.16	<0.5	26549-1	<0.5 || <0.5	LCS-4	95%
Toluene	mg/kg	0.5	GC.16	<0.5	26549-1	<0.5 || <0.5	LCS-4	136%
Ethylbenzene	mg/kg	1	GC.16	<1.0	26549-1	<1.0 || <1.0	LCS-4	135%
m+p-xylene	mg/kg	2	GC.16	<2.0	26549-1	<2.0 || <2.0	LCS-4	139%
o-Xylene	mg/kg	1	GC.16	<1.0	26549-1	<1.0 || <1.0	LCS-4	140%
Surrogate aaa-Trifluorotoluene	%		GC.16	100	26549-1	104 || 112 || RPD: 7	LCS-4	97%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/02/2009	26549-1	13/02/2009 || 13/02/2009	LCS-3	13/02/2009
Date analysed	-			14/02/09	26549-1	14/02/2009 || 14/02/2009	LCS-3	14/02/09
TPH C_{10} - C_{14}	mg/kg	50	GC.3	<50	26549-1	<50 || <50	LCS-3	108%
TPH C_{15} - C_{28}	mg/kg	100	GC.3	<100	26549-1	350 || 1000 || RPD: 96	LCS-3	100%
TPH C_{29} - C_{36}	mg/kg	100	GC.3	<100	26549-1	290 || 680 || RPD: 80	LCS-3	88%
Surrogate o-Terphenyl	%		GC.3	95	26549-1	110 || #	LCS-3	96%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/02/2009	26549-1	13/02/2009 || 13/02/2009	LCS-4	13/02/2009
Date analysed	-			14/02/2009	26549-1	14/02/2009 || 14/02/2009	LCS-4	14/02/2009
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	0.2 || 2.5 || RPD: 170	LCS-4	97%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	1.1 || 11 || RPD: 164	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	0.1 || 1.6 || RPD: 176	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	0.4 || 7.0 || RPD: 178	LCS-4	101%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	5.7 || 44 || RPD: 154	LCS-4	99%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	1.6 || 12 || RPD: 153	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	10 || 38 || RPD: 117	LCS-4	98%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	10 || 33 || RPD: 107	LCS-4	102%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	5.6 || 19 || RPD: 109	[NR]	[NR]
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	5.5 || 16 || RPD: 98	LCS-4	99%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	26549-1	10 || 25 || RPD: 86	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	26549-1	7.2 || 17 || RPD: 81	LCS-4	104%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	4.9 || 11 || RPD: 77	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	0.5 || 1.4 || RPD: 95	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	26549-1	4.6 || 9.9 || RPD: 73	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	78	26549-1	71 || 70 || RPD: 1	LCS-4	73%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/02/2009	26549-1	13/02/2009 || 13/02/2009	LCS-4	13/02/2009
Date analysed	-			14/02/2009	26549-1	14/02/2009 || 14/02/2009	LCS-4	14/02/2009
HCB	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	127%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	121%
Heptachlor	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	121%
delta-BHC	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	127%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	112%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	127%
Dieldrin	mg/kg	0.1	GC-5	<0.1	26549-1	0.4 || 1.7 || RPD: 124	LCS-4	127%
Endrin	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	127%
pp-DDD	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	135%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	LCS-4	122%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	90	26549-1	101 || 89 || RPD: 13	LCS-4	96%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/02/2009	26549-1	13/02/2009 || 13/02/2009	LCS-4	13/02/2009
Date analysed	-			14/02/2009	26549-1	14/02/2009 || 14/02/2009	LCS-4	14/02/2009
Diazinon	mg/kg	0.1	GC.8	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	GC.8	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	GC.8	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	GC.8	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	GC.8	<0.1	26549-1	0.80 || <0.1	[NR]	[NR]
Fenitrothion	mg/kg	0.1	GC.8	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	GC.8	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	GC.8	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC.8	90	26549-1	101 || 89 || RPD: 13	LCS-4	96%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			13/02/09	26549-1	13/02/2009 || 13/02/2009	LCS-4	13/2/09
Date analysed	-			14/02/09	26549-1	14/02/2009 || 14/02/2009	LCS-4	14/2/09
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	26549-1	<0.1 || <0.1	LCS-4	120%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	26549-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	90	26549-1	101 || 89 || RPD: 13	LCS-4	129%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/02/2009	[NT]	[NT]	LCS-1	16/02/2009
Date analysed	-			16/02/2009	[NT]	[NT]	LCS-1	16/02/2009
Total Phenolics (as Phenol)	mg/kg	5	LAB.30	<5.0	[NT]	[NT]	LCS-1	92%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			14/02/09	26549-1	14/02/2009 || 14/02/2009	LCS-3	14/02/09
Date analysed	-			16/02/09	26549-1	16/02/2009 || 16/02/2009	LCS-3	16/02/09
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	26549-1	4 || 4 || RPD: 0	LCS-3	93%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	26549-1	0.6 || 0.6 || RPD: 0	LCS-3	98%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	26549-1	11 || 11 || RPD: 0	LCS-3	100%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	26549-1	75 || 100 || RPD: 29	LCS-3	102%
Lead	mg/kg	1	Metals.20 ICP-AES	<1	26549-1	1500 || 1500 || RPD: 0	LCS-3	96%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	26549-1	0.3 || 0.3 || RPD: 0	LCS-3	101%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	26549-1	9 || 12 || RPD: 29	LCS-3	100%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	26549-1	500 || 500 || RPD: 0	LCS-3	98%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Total Cyanide	mg/kg	0.5	LAB.13	<0.5	[NT]	[NT]	LCS-1	96%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			13/2/09
Date analysed	-			13/2/09
Moisture	%	0.1	LAB.8	<0.10

QUALITY CONTROL Asbestos ID - soils	UNITS	PQL	METHOD	Blank
Date analysed	-			[NT]

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26549-2	13/02/09
Date analysed	-	[NT]	[NT]	26549-2	15/02/09
vTPH C_6 - C_9	mg/kg	[NT]	[NT]	26549-2	111%
Benzene	mg/kg	[NT]	[NT]	26549-2	77%
Toluene	mg/kg	[NT]	[NT]	26549-2	117%
Ethylbenzene	mg/kg	[NT]	[NT]	26549-2	117%
m+p-xylene	mg/kg	[NT]	[NT]	26549-2	123%

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
o-Xylene	mg/kg	[NT]	[NT]	26549-2	125%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	26549-2	130%
QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26549-2	13/02/2009
Date analysed	-	[NT]	[NT]	26549-2	14/02/09
TPH C_{10} - C_{14}	mg/kg	[NT]	[NT]	26549-2	107%
TPH C_{15} - C_{28}	mg/kg	[NT]	[NT]	26549-2	108%
TPH C_{29} - C_{36}	mg/kg	[NT]	[NT]	26549-2	69%
Surrogate o-Terphenyl	%	[NT]	[NT]	26549-2	97%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26549-2	13/02/2009
Date analysed	-	[NT]	[NT]	26549-2	14/02/2009
Naphthalene	mg/kg	[NT]	[NT]	26549-2	97%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	26549-2	100%
Phenanthrene	mg/kg	[NT]	[NT]	26549-2	83%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	26549-2	85%
Pyrene	mg/kg	[NT]	[NT]	26549-2	93%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	26549-2	100%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	26549-2	104%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	[NT]	[NT]	26549-2	73%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26549-2	13/02/2009
Date analysed	-	[NT]	[NT]	26549-2	14/02/2009
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	26549-2	120%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	26549-2	88%
Heptachlor	mg/kg	[NT]	[NT]	26549-2	118%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	26549-2	119%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	26549-2	118%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	26549-2	124%
Dieldrin	mg/kg	[NT]	[NT]	26549-2	123%
Endrin	mg/kg	[NT]	[NT]	26549-2	128%
pp-DDD	mg/kg	[NT]	[NT]	26549-2	133%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	26549-2	123%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	26549-2	89%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26549-2	13/02/2009
Date analysed	-	[NT]	[NT]	26549-2	14/02/2009
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	[NT]	[NT]	26549-2	118%
Fenitrothion	mg/kg	[NT]	[NT]	26549-2	66%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	26549-2	86%
Surrogate TCLMX	%	[NT]	[NT]	26549-2	106%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26549-2	13/02/09
Date analysed	-	[NT]	[NT]	26549-2	14/02/09
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	26549-2	134%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	26549-2	134%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	26549-2	14/02/09
Date analysed	-	[NT]	[NT]	26549-2	16/02/09
Arsenic	mg/kg	[NT]	[NT]	26549-2	97%
Cadmium	mg/kg	[NT]	[NT]	26549-2	92%
Chromium	mg/kg	[NT]	[NT]	26549-2	101%
Copper	mg/kg	[NT]	[NT]	26549-2	112%
Lead	mg/kg	[NT]	[NT]	26549-2	104%
Mercury	mg/kg	[NT]	[NT]	26549-2	97%
Nickel	mg/kg	[NT]	[NT]	26549-2	98%
Zinc	mg/kg	[NT]	[NT]	26549-2	104%

Report Comments:

Total Petroleum Hydrocarbons in soil:# Percent recovery not reported due to high concentration of analytes in the sample. Dup: The RPD for duplicate results is accepted due to the non homogenous nature of the sample.

PAH's in soil: #1The RPD for duplicate results is accepted due to the non homogenous nature of the sample.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in it's own container.
Asbestos was analysed by Approved Identifier: Matt Mansfield

INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: CHIPPING DALE (UTS) ~~Ultimo~~ - Environmental Assessment
Project No: A59960.01 Sampler: WFY
Project Mgr: PG Mob. Phone: 0418 274 129
Email: Jessica.dersten@douglaspartners.com.au
Date Required: standard Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: Heavy Metals	BTEX/ TPH	OCPs/OPPs PCBs	PAH	Phenols	Asbestos	Cyanide						Other	Notes
BH 9	0-2-0.5	1	11.02.09	S	G	✓	✓	✓	✓	✓	✓								
BH 10	0-0.1	2				✓	✓	✓	✓	✓	✓	✓							
BH 11	0.2-0.5	3				✓	✓	✓	✓	✓	✓								
BDA/110209	-	4				✓			✓										
BDB/110209	-	5	↓	↓	↓	✓			✓										

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200
Job No: 26549
Date received: 12/2/09
Time received: 5:15
Received by: JHie
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by: JMD / PG	Signed:	Date & Time: 12.02.09 / 3 pm	Received By:	Date & Time:	12/2/09 5:15
Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:	

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26708

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Paul Gorman

Sample log in details:

Your Reference:	**45996.01, Chippendale**
No. of samples:	24 Soils
Date samples received:	18/02/09
Date completed instructions received:	18/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	24/02/09
Date of Preliminary Report:	Not Issued
Issue Date:	24/02/09

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst
Operations Manager

ACCREDITED FOR TECHNICAL COMPETENCE

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26708-1 1/0.7-1.0 6/02/2009 Soil	26708-2 2/0.3-0.5 4/02/2009 Soil	26708-3 2/1.7-2.0 4/02/2009 Soil	26708-4 3/0.7-1.0 4/02/2009 Soil	26708-5 3/1.2-1.5 4/02/2009 Soil
Date extracted	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Naphthalene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	1.1	0.5	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	6.5	2.8	<0.1	<0.1	<0.1
Anthracene	mg/kg	1.6	0.6	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	12	4.7	<0.1	<0.1	<0.1
Pyrene	mg/kg	12	5.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	6.4	2.8	<0.1	<0.1	<0.1
Chrysene	mg/kg	5.6	2.4	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	10	4.0	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	7.8	2.9	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	5.7	2.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.6	0.4	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	4.4	1.6	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	109	109	110	104	106

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26708-6 4/1.2-1.5 4/02/2009 Soil	26708-7 4/1.7-2.0 4/02/2009 Soil	26708-8 5/1.2-1.5 4/02/2009 Soil	26708-9 6/0.3-0.5 4/02/2009 Soil	26708-10 6/0.7-1.0 4/02/2009 Soil
Date extracted	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Naphthalene	mg/kg	<0.1	<0.1	<0.1	3.0	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	20	0.2
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	1.7	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	9.4	0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	87	1.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	21	0.2
Fluoranthene	mg/kg	<0.1	<0.1	0.1	91	1.4
Pyrene	mg/kg	<0.1	<0.1	0.1	78	1.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	42	0.7
Chrysene	mg/kg	<0.1	<0.1	<0.1	28	0.6
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	48	1.1
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.06	36	0.7
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	23	0.5
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	4.6	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	15	0.3
Surrogate p-Terphenyl-d_{14}	%	106	110	110	110	107

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26708-11 7/0.3-0.5 5/02/2009 Soil	26708-12 7A/1.7-2.0 5/02/2009 Soil	26708-13 8/0.3-0.5 5/02/2009 Soil	26708-14 8/0.7-1.0 5/02/2009 Soil	26708-15 12/0.3-0.5 6/02/2009 Soil
Date extracted	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Naphthalene	mg/kg	4.2	<0.1	0.4	<0.1	1.4
Acenaphthylene	mg/kg	14	<0.1	2.4	0.2	5.7
Acenaphthene	mg/kg	1.3	<0.1	0.1	<0.1	0.6
Fluorene	mg/kg	5.1	<0.1	0.4	<0.1	2.7
Phenanthrene	mg/kg	77	<0.1	7.9	0.5	26
Anthracene	mg/kg	16	<0.1	2.5	0.1	6.0
Fluoranthene	mg/kg	77	<0.1	18	1.2	28
Pyrene	mg/kg	68	<0.1	20	1.4	25
Benzo(a)anthracene	mg/kg	34	<0.1	11	0.8	13
Chrysene	mg/kg	24	<0.1	9.1	0.7	9.8
Benzo(b+k)fluoranthene	mg/kg	41	<0.2	18	1.5	17
Benzo(a)pyrene	mg/kg	30	<0.05	14	1.1	13
Indeno(1,2,3-c,d)pyrene	mg/kg	21	<0.1	10	0.8	8.7
Dibenzo(a,h)anthracene	mg/kg	3.9	<0.1	1.9	0.1	1.7
Benzo(g,h,i)perylene	mg/kg	14	<0.1	7.5	0.6	6.1
Surrogate p-Terphenyl-d_{14}	%	107	110	114	112	107

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	26708-16 12/1.2-1.5 6/02/2009 Soil	26708-17 13/0.3-0.5 5/02/2009 Soil	26708-18 13/1.2-1.5 5/02/2009 Soil	26708-19 14/0.3-0.5 5/02/2009 Soil	26708-20 14/1.2-1.5 5/02/2009 Soil
Date extracted	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Naphthalene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.3	1.0	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	0.5	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	1.4	6.0	0.3	<0.1	<0.1
Anthracene	mg/kg	0.3	1.2	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.7	6.7	0.6	<0.1	0.1
Pyrene	mg/kg	1.6	5.9	0.6	<0.1	0.1
Benzo(a)anthracene	mg/kg	0.9	3.0	0.4	<0.1	<0.1
Chrysene	mg/kg	0.7	2.3	0.3	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	1.2	3.8	0.6	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.9	2.7	0.4	<0.05	0.07
Indeno(1,2,3-c,d)pyrene	mg/kg	0.7	1.7	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.5	1.2	0.2	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	105	109	109	114	107

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26708-21 15/0.7-1.0 5/02/2009 Soil	26708-22 15/2.2-2.5 5/02/2009 Soil	26708-23 16/0.7-1.0 5/02/2009 Soil	26708-24 16/1.7-2.0 5/02/2009 Soil
Date extracted	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.2
Acenaphthylene	mg/kg	<0.1	<0.1	0.2	1.3
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	0.3
Phenanthrene	mg/kg	<0.1	<0.1	0.6	4.1
Anthracene	mg/kg	<0.1	<0.1	0.2	1.1
Fluoranthene	mg/kg	<0.1	<0.1	1.3	7.8
Pyrene	mg/kg	<0.1	<0.1	1.6	9.0
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.9	4.9
Chrysene	mg/kg	<0.1	<0.1	0.9	4.2
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	1.7	8.6
Benzo(a)pyrene	mg/kg	<0.05	<0.05	1.1	6.0
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.8	4.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.1	0.8
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.7	3.2
Surrogate p-Terphenyl-d_{14}	%	109	105	110	108

Acid Extractable metals in soil						
Our Reference:	UNITS	26708-1	26708-2	26708-3	26708-4	26708-5
Your Reference	----------	1/0.7-1.0	2/0.3-0.5	2/1.7-2.0	3/0.7-1.0	3/1.2-1.5
Date Sampled	----------	6/02/2009	4/02/2009	4/02/2009	4/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Lead	mg/kg	140	54	4	26	31

Acid Extractable metals in soil						
Our Reference:	UNITS	26708-6	26708-7	26708-8	26708-9	26708-10
Your Reference	----------	4/1.2-1.5	4/1.7-2.0	5/1.2-1.5	6/0.3-0.5	6/0.7-1.0
Date Sampled	----------	4/02/2009	4/02/2009	4/02/2009	4/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Lead	mg/kg	1,500	9	110	340	100

Acid Extractable metals in soil						
Our Reference:	UNITS	26708-11	26708-12	26708-13	26708-14	26708-15
Your Reference	----------	7/0.3-0.5	7A/1.7-2.0	8/0.3-0.5	8/0.7-1.0	12/0.3-0.5
Date Sampled	----------	5/02/2009	5/02/2009	5/02/2009	5/02/2009	6/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Lead	mg/kg	130	17	210	150	180

Acid Extractable metals in soil						
Our Reference:	UNITS	26708-16	26708-17	26708-18	26708-19	26708-20
Your Reference	----------	12/1.2-1.5	13/0.3-0.5	13/1.2-1.5	14/0.3-0.5	14/1.2-1.5
Date Sampled	----------	6/02/2009	5/02/2009	5/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Lead	mg/kg	170	290	240	12	54

Acid Extractable metals in soil					
Our Reference:	UNITS	26708-21	26708-22	26708-23	26708-24
Your Reference	----------	15/0.7-1.0	15/2.2-2.5	16/0.7-1.0	16/1.7-2.0
Date Sampled	----------	5/02/2009	5/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Lead	mg/kg	16	2	200	130

Moisture						
Our Reference:	UNITS	26708-1	26708-2	26708-3	26708-4	26708-5
Your Reference	----------	1/0.7-1.0	2/0.3-0.5	2/1.7-2.0	3/0.7-1.0	3/1.2-1.5
Date Sampled	----------	6/02/2009	4/02/2009	4/02/2009	4/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Moisture	%	9.5	6.2	5.7	6.1	19

Moisture						
Our Reference:	UNITS	26708-6	26708-7	26708-8	26708-9	26708-10
Your Reference	----------	4/1.2-1.5	4/1.7-2.0	5/1.2-1.5	6/0.3-0.5	6/0.7-1.0
Date Sampled	----------	4/02/2009	4/02/2009	4/02/2009	4/02/2009	4/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Moisture	%	2.3	2.1	14	13	16

Moisture						
Our Reference:	UNITS	26708-11	26708-12	26708-13	26708-14	26708-15
Your Reference	----------	7/0.3-0.5	7A/1.7-2.0	8/0.3-0.5	8/0.7-1.0	12/0.3-0.5
Date Sampled	----------	5/02/2009	5/02/2009	5/02/2009	5/02/2009	6/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Moisture	%	7.4	11	5.9	3.9	6.5

Moisture						
Our Reference:	UNITS	26708-16	26708-17	26708-18	26708-19	26708-20
Your Reference	----------	12/1.2-1.5	13/0.3-0.5	13/1.2-1.5	14/0.3-0.5	14/1.2-1.5
Date Sampled	----------	6/02/2009	5/02/2009	5/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Moisture	%	11	7.5	24	6.0	9.5

Moisture					
Our Reference:	UNITS	26708-21	26708-22	26708-23	26708-24
Your Reference	----------	15/0.7-1.0	15/2.2-2.5	16/0.7-1.0	16/1.7-2.0
Date Sampled	----------	5/02/2009	5/02/2009	5/02/2009	5/02/2009
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Date analysed	-	19/02/2009	19/02/2009	19/02/2009	19/02/2009
Moisture	%	6.1	19	21	17

Method ID	Methodology Summary
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			19/02/2009	26708-1	19/02/2009 || 19/02/2009	LCS-3	19/02/2009 %
Date analysed	-			19/02/2009	26708-1	19/02/2009 || 19/02/2009	LCS-3	19/02/2009 %
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	0.2 || 0.4 || RPD: 67	LCS-3	95%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	1.1 || 1.5 || RPD: 31	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	<0.1 || 0.2	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	0.4 || 0.6 || RPD: 40	LCS-3	103%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	6.5 || 9.7 || RPD: 40	LCS-3	104%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	1.6 || 2.5 || RPD: 44	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	12 || 17 || RPD: 34	LCS-3	103%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	12 || 17 || RPD: 34	LCS-3	109%
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	6.4 || 9.0 || RPD: 34	[NR]	[NR]
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	5.6 || 7.5 || RPD: 29	LCS-3	106%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	26708-1	10 || 13 || RPD: 26	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	26708-1	7.8 || 10 || RPD: 25	LCS-3	113%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	5.7 || 7.3 || RPD: 25	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	0.6 || 1.4 || RPD: 80	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	26708-1	4.4 || 5.6 || RPD: 24	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	108	26708-1	109 || 108 || RPD: 1	LCS-3	110%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			19/02/09	26708-1	19/02/2009 || 19/02/2009	LCS-3	19/02/09%
Date analysed	-			19/02/09	26708-1	19/02/2009 || 19/02/2009	LCS-3	19/02/09%
Lead	mg/kg	1	Metals.20 ICP-AES	<1	26708-1	140 || 150 || RPD: 7	LCS-3	100%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			19/2/09
Date analysed	-			19/2/09
Moisture	%	0.1	LAB.8	<0.10

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	26708-11	19/02/2009 || 19/02/2009	26708-2	19/02/2009%
Date analysed	-	26708-11	19/02/2009 || 19/02/2009	26708-2	19/02/2009%
Naphthalene	mg/kg	26708-11	4.2 || 2.9 || RPD: 37	26708-2	97%
Acenaphthylene	mg/kg	26708-11	14 || 13 || RPD: 7	[NR]	[NR]
Acenaphthene	mg/kg	26708-11	1.3 || 1.2 || RPD: 8	[NR]	[NR]
Fluorene	mg/kg	26708-11	5.1 || 4.8 || RPD: 6	26708-2	102%
Phenanthrene	mg/kg	26708-11	77 || 54 || RPD: 35	26708-2	75%
Anthracene	mg/kg	26708-11	16 || 12 || RPD: 29	[NR]	[NR]
Fluoranthene	mg/kg	26708-11	77 || 59 || RPD: 26	26708-2	107%
Pyrene	mg/kg	26708-11	68 || 52 || RPD: 27	26708-2	106%
Benzo(a)anthracene	mg/kg	26708-11	34 || 28 || RPD: 19	[NR]	[NR]
Chrysene	mg/kg	26708-11	24 || 19 || RPD: 23	26708-2	100%
Benzo(b+k)fluoranthene	mg/kg	26708-11	41 || 34 || RPD: 19	[NR]	[NR]
Benzo(a)pyrene	mg/kg	26708-11	30 || 25 || RPD: 18	26708-2	116%
Indeno(1,2,3-c,d)pyrene	mg/kg	26708-11	21 || 17 || RPD: 21	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	26708-11	3.9 || 3.3 || RPD: 17	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	26708-11	14 || 11 || RPD: 24	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	26708-11	107 || 109 || RPD: 2	26708-2	108%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	26708-11	19/02/2009 || 19/02/2009	LCS-4	19/02/09%
Date analysed	-	26708-11	19/02/2009 || 19/02/2009	LCS-4	19/02/09%
Lead	mg/kg	26708-11	130 || 160 || RPD: 21	LCS-4	102%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	26708-21	19/02/2009 || 19/02/2009	LCS-4	19/02/2009%
Date analysed	-	26708-21	19/02/2009 || 19/02/2009	LCS-4	19/02/2009%
Naphthalene	mg/kg	26708-21	<0.1 || <0.1	LCS-4	96%
Acenaphthylene	mg/kg	26708-21	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	26708-21	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	26708-21	<0.1 || <0.1	LCS-4	104%
Phenanthrene	mg/kg	26708-21	<0.1 || <0.1	LCS-4	105%
Anthracene	mg/kg	26708-21	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	26708-21	<0.1 || <0.1	LCS-4	103%
Pyrene	mg/kg	26708-21	<0.1 || <0.1	LCS-4	110%
Benzo(a)anthracene	mg/kg	26708-21	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	26708-21	<0.1 || <0.1	LCS-4	107%
Benzo(b+k)fluoranthene	mg/kg	26708-21	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	26708-21	<0.05 || <0.05	LCS-4	113%
Indeno(1,2,3-c,d)pyrene	mg/kg	26708-21	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	26708-21	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	26708-21	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	26708-21	109 || 109 || RPD: 0	LCS-4	109%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	26708-21	19/02/2009 || 19/02/2009	26708-2	19/02/09%
Date analysed	-	26708-21	19/02/2009 || 19/02/2009	26708-2	19/02/09%
Lead	mg/kg	26708-21	16 || 13 || RPD: 21	26708-2	100%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	26708-22	19/02/2009%
Date analysed	-	[NT]	[NT]	26708-22	19/02/2009%
Naphthalene	mg/kg	[NT]	[NT]	26708-22	81%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	26708-22	103%
Phenanthrene	mg/kg	[NT]	[NT]	26708-22	103%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	26708-22	102%
Pyrene	mg/kg	[NT]	[NT]	26708-22	108%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	26708-22	106%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	26708-22	111%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	[NT]	[NT]	26708-22	107%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	26708-22	19/02/09%
Date analysed	-	[NT]	[NT]	26708-22	19/02/09%
Lead	mg/kg	[NT]	[NT]	26708-22	96%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

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CHAIN OF CUSTODY

Project Name: Chippendale Environmental Assessment
Project No: 45996.01 Sampler: Jessica Derrien
Project Mgr: PG Mob. Phone: ~~0418 274 129~~ 0427 949 878
Email: Paul.Goman~~Jessica.derrien~~@douglaspartners.com.au
Date Required: 4 Day TA Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other	Notes
1/0.7-1.0		1	6/2/09	S	G														
2/0.3-0.5		2	4/2/09																
2/1.7-2.0		3	4/2/09																
3/0.7-1.0		4	4/2/09																
3/1.2-1.5		5	4/2/09																
4/~~0.7~~1.2-1.5		6	4/2/09																
4/1.7-2.0		7	4/2/09																
5/~~0.7~~1.2-1.5		8	4/2/09																
6/0.3-0.5		9	4/2/09																
6/0.7-1.0		10	4/2/09																
7/0.3-0.5		11	5/2/09																
7A/1.7-2.0		12	5/2/09																

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200
Job No: 26708
Date received: 18/2/09
Time received: 3
Received by: SS
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by: J. Derrien Signed: Date & Time: 18/2/09 12:00 Received By: Simon Sorg Date & Time: 18/2/09
Relinquished by: Signed: Date & Time: Received By: Date & Time:

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Chippendale Environmental Assessment
Project No: 45996.01 Sampler: Jessica Derrien
Project Mgr: PG Mob. Phone: ~~0418 274 429~~ 0427 949 878
Email: Paul.Gorman~~Jessica.derrien~~@douglaspartners.com.au
Date Required: 4 Day T/A Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other	Notes
BH03	0.5	13	5/2/09	S	G														
BH07	1.0	14	5/2/09																
BH2	0.3-0.5	15	6/2/09																
BH2	1.2-1.5	16	6/2/09																
BH3	0.3-0.5	17	5/2/09																
BH3	1.2-1.5	18	5/2/09																
BH4	0.3-0.5	19	5/2/09																
BH4	1.2-1.5	20	5/2/09																
BH5	0.7-1.0	21	5/2/09																
BH5	2.2-2.5	22	5/2/09																
BH6	0.7-1.0	23	5/2/09																
BH6	1.7-2.0	24	5/2/09																

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200

Job No: 26708
Date received: 18/2/09
Time received: 3:[illegible]
Received by: SY
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114 Phone: (02) 9809 0666 Fax: (02) 9809 4095
Relinquished by: J. Derrien Signed: Date & Time: 18/2/09 0.00 Received By: Simon Song Date & Time: 18/
Relinquished by: Signed: Date & Time: Received By: Date & Time:

Aileen Hie

From: Galia Nikolaeva [Galia.Nikolaeva@douglaspartners.com.au]
Sent: Friday, 27 February 2009 04:15 PM
To: Aileen Hie
Subject: DP job 45996.01

-1

Aileen,
Could you please proceed with the chromium reducible sulphur (SCr) test for sample 13/1.7-2.0 for the above job - ~~standard~~ turnaround.
Thanks 48hr

Galia Nikolaeva
Environmental Scientist
Douglas Partners
Ph: 8878 0607
Fax: 9809 4095
Mob: 0418651227
email: galia.nikolaeva@douglaspartners.com.au

Envirolab Ref: 26431A
Due: 3/3/09
48hr T/A.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26431-A

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Galia Nikolaeva

Sample log in details:

Your Reference:	**45996.01, Environmental Assessment**
No. of samples:	Additional Testing on 1 Soil
Date samples received:	10/02/09
Date completed instructions received:	27/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	3/03/09
Date of Preliminary Report:	Not Issued
Issue Date:	3/03/09

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer
Business Development & Quality Manager

Chromium Suite Our Reference: Your Reference Type of sample	UNITS ---------- ----------	 26431-A-1 13/1.2-2.0 Soil
Chromium Reducible Sulfur	%w/w	0.032
a-Chromium Reducible Sulfur	moles H^+/t	20

Method ID	Methodology Summary
LAB.68	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL Chromium Suite	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chromium Reducible Sulfur	%w/w	0.01	LAB.68	<0.010	[NT]	[NT]	LCS	121%
a-Chromium Reducible Sulfur	moles H^+/t	5	LAB.68	<5.0	[NT]	[NT]	[NR]	[NR]

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26549-A

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Wen-Fei Yuan

Sample log in details:

Your Reference:	**45996.01 Chippingdale UTS**
No. of samples:	Additional Testing on 2 Soils
Date samples received:	12/2/09
Date completed instructions received:	27/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	3/03/09
Date of Preliminary Report:	Not Issued
Issue Date:	3/03/09

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst
Operations Manager

Metals in TCLP Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	26549-A-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-A-3 BH 11 0.2-0.5 11/02/2009 Soil
Date extracted	-	27/02/2009	27/02/2009
Date analysed	-	3/03/2009	3/03/2009
pH of soil for fluid# determ.	pH units	2.80	2.80
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.00	5.10
Lead in TCLP	mg/L	1.7	0.15

PAHs in TCLP (USEPA 1311) Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	26549-A-1 BH 9 0.2-0.5 11/02/2009 Soil	26549-A-3 BH 11 0.2-0.5 11/02/2009 Soil
Date extracted	-	2/03/2009	2/03/2009
Date analysed	-	2/03/2009	2/03/2009
Naphthalene in TCLP	mg/L	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001
Benzo(b+k)fluoranthene in TCLP	mg/L	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001
Surrogate p-Terphenyl-d_{14}	%	139	127

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
GC.12 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC.12	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL Metals in TCLP	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/02/2009	[NT]	[NT]	LCS-W1	27/02/09
Date analysed	-			03/03/09	[NT]	[NT]	LCS-W1	03/03/09
Lead in TCLP	mg/L	0.03	Metals.20 ICP-AES	<0.030	[NT]	[NT]	LCS-W1	100%

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			2/03/2009	[NT]	[NT]	LCS-W1	2/03/2009
Date analysed	-			2/03/2009	[NT]	[NT]	LCS-W1	2/03/2009
Naphthalene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	95%
Acenaphthylene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	105%
Phenanthrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	108%
Anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	104%
Pyrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	109%
Benzo(a)anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	108%
Benzo(b+k)fluoranthene in TCLP	mg/L	0.002	GC.12 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	112%
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12	121	[NT]	[NT]	LCS-W1	133%

Report Comments:

Samples out of holding time for TCLP PAH analysis.
Asbestos was analysed by Approved Identifier: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Aileen Hie

From: Wen-Fei Yuan [WenFei.Yuan@douglaspartners.com.au]
Sent: Friday, 27 February 2009 01:19 PM
To: Aileen Hie
Subject: UST - 45996.01 TCLP test

Envirolab Ref: 26549A
Due: 3/3/09
48hr T/A.

Hi Aileen,

Our ref no. 45996.01

Could you please conduct TCLP on the following samples:

- 6/0.3-0.5 (PAH)
- 9/0.2-0.5 (PAH/Pb)
- 11/0.2-0.5 (PAH/Pb)

1
3

Are the above samples over the holding time for PAH?

Wen-Fei Yuan | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0763 | F: 02 9809 4095 | M: 0402 057 137 | E: WenFei.Yuan@douglaspartners.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 26708-A

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Wen-Fei Yuan

Sample log in details:

Your Reference:	**45996.01, Chippendale**
No. of samples:	Additional Testing on 1 Soil
Date samples received:	18/02/09
Date completed instructions received:	27/02/09

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	3/03/09
Date of Preliminary Report:	Not Issued
Issue Date:	3/03/09

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst
Operations Manager

PAHs in TCLP (USEPA 1311) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	26708-A-9 6/0.3-0.5 4/02/2009 Soil
pH of soil for fluid# determ.	pH units	2.60
pH of soil for fluid # determ. (acid)	pH units	<0.100
Extraction fluid used	-	1
pH of final Leachate	pH units	5.20
Date extracted	-	2/03/2009
Date analysed	-	2/03/2009
Naphthalene in TCLP	mg/L	0.001
Acenaphthylene in TCLP	mg/L	0.002
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	0.003
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(b+k)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Surrogate p-Terphenyl-d_{14}	%	113

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
GC.12 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC.12	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			2/03/2009	[NT]	[NT]	LCS-W1	2/03/2009
Date analysed	-			2/03/2009	[NT]	[NT]	LCS-W1	2/03/2009
Naphthalene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	95%
Acenaphthylene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	105%
Phenanthrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	108%
Anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	104%
Pyrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	109%
Benzo(a)anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	108%
Benzo(b+k)fluoranthene in TCLP	mg/L	0.002	GC.12 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	112%
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12	121	[NT]	[NT]	LCS-W1	133%

Report Comments:

Samples out of holding time for TCLP PAH analysis.

Asbestos was analysed by Approved Identifier: Not applicable for this job

INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than

RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and speciated phenols.

Aileen Hie

From: Wen-Fei Yuan [WenFei.Yuan@douglaspartners.com.au]
Sent: Friday, 27 February 2009 01:19 PM
To: Aileen Hie
Subject: UST - 45996.01 TCLP test

Envirolab Ref: 26708A
Due: 3/3/09
48hr TAT.

Hi Aileen,

Our ref no. 45996.01

Could you please conduct TCLP on the following samples:

9 - 6/0.3-0.5 (PAH)
- 9/0.2-0.5 (PAH/Pb)
- 11/0.2-0.5 (PAH/Pb)

Are the above samples over the holding time for PAH?

Wen-Fei Yuan | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0763 | F: 02 9809 4095 | M: 0402 057 137 | E: WenFei.Yuan@douglaspartners.com.au

NEPC GUIDELINE COMPLIANCE - DQO

1. GENERAL

A. Results relate specifically to samples as received. Sample results are not corrected for matrix spike, lcs, or surrogate recovery data.

B. EQL's are matrix dependant and may be increased due to sample dilution or matrix interference.

C. Laboratory QA/QC samples are specific to this project.

D. Inter-laboratory proficiency results are available upon request. NATA accreditation details available at www.nata.asn.au.

E. VOC spikes & surrogates added to samples during extraction, SVOC spikes & surrogates added prior to extraction.

F. Recovery data outside GAC limits shall be investigated and compared to ASAC (historical mean +/- 3sd). If recovery data <20%, then the relevant results for that compound are considered not reliable.

G. Recovery data (ms, surrogate, crm, lcs) outside ASAC limits shall initiate an investigative action. Anomolous QC data is examined in conjunction with other QC samples and a final decision whether to accept or reject results is provided by the professional judgement of the senior analyst. The USEPA-CLP National Functional Guidelines are referred to for specific recommendations.

H. Extraction (preparation) date refers to the date that sample preparation was initiated. Note that certain methods not requiring sample preparation (eg. VOCs in water, etc) may report a common extraction and analysis date.

I. LabMark shall maintain an official copy of this Certificate of Analysis for all tracable reference purposes.

2. CHAIN OF CUSTODY (COC) & SAMPLE RECEIPT NOTICE (SRN) REQUIREMENTS

A. SRN issued to client upon sample receipt & login verification.

B. Preservation & sampling date details specified on COC and SRN, unless noted.

C. Sample Integrity & Validated Time of Sample Receipt (VTSR) Holding Times verified (preservation may extend holding time, refer to preservation chart).

3. NATA ACCREDITED METHODS

A. NATA accreditation held for each in-house method and sample matrix type reported, unless noted below (Refer to subcontracted test reports for NATA accreditation status).

B. NATA accredited in-house laboratory methods are referenced from NEPC, ASTM, modified USEPA / APHA documents. Corporate Accreditation No. 13542.

C. Subcontracted analyses: Refer to Sample Receipt Notice and additional DQO comments.

Laboratory Report: E041669

Cover Page 3 of 3

4. QA/QC FREQUENCY COMPLIANCE TABLE SPECIFIC TO THIS REPORT

Matrix: **SOIL**

Page:	Method:	Totals:	#d	%d-ratio	#t	#s	%s-ratio
1	Polyaromatic Hydrocarbons (PAH)	1	0	0%	0	0	0%
2	Acid extractable metals (M7)	1	0	0%	0	0	0%
3	Acid extractable metals - mercury	1	0	0%	0	0	0%
4	Moisture	1	--	--	--	--	--

GLOSSARY:

#d	number of discrete duplicate extractions/analyses performed.
%d-ratio	NEPC guideline for laboratory duplicates is 1 in 10 samples (min 10%).
#t	number of triplicate extractions/analyses performed.
#s	number of spiked samples analysed.
%s-ratio	USEPA guideline for laboratory matrix spikes is 1 in 20 samples (min 5%).

5. ADDITIONAL COMMENTS SPECIFIC TO THIS REPORT

A. All tests were conducted by LabMark Environmental Sydney, NATA accreditation No. 13542, Corporate Site No. 13535, unless indicated below.

Laboratory QA/QC data shall relate specifically to this report, and may provide an indication of site specific sample result quality. LabMark DOES NOT report NON-RELEVANT BATCH QA/QC data. Acceptance of this self assessment certificate does not preclude any requirement for a QA/QC review by a accredited contaminated site EPA auditor, when and wherever necessary. Laboratory QA/QC self assessment references available upon request.

LabMark
ENVIRONMENTAL LABORATORIES

Laboratory Report No: E041669
Client Name: Douglas Partners
Contact Name: Jessica Derrien
Client Reference: Chippingdale (UTS) Environmental Asses. 45996.01

Page: 1 of 4
plus cover page
Date: 19/02/09
This report supercedes reports issued on: N/A

Final
Certificate
of Analysis

Laboratory Identification		**197148**	**lcs**	**mb**							
Sample Identification		BDB1/110209	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		11/2/09	--	--							
Laboratory Extraction (Preparation) Date		17/2/09	17/2/09	17/2/09							
Laboratory Analysis Date		18/2/09	17/2/09	17/2/09							
Method : E007.2											
Polyaromatic Hydrocarbons (PAH)	**EQL**										
Naphthalene	0.5	<0.5	99%	<0.5							
Acenaphthylene	0.5	2.7	101%	<0.5							
Acenaphthene	0.5	<0.5	99%	<0.5							
Fluorene	0.5	<0.5	99%	<0.5							
Phenanthrene	0.5	8.6	102%	<0.5							
Anthracene	0.5	3.3	102%	<0.5							
Fluoranthene	0.5	28.4	102%	<0.5							
Pyrene	0.5	31.7	102%	<0.5							
Benz(a)anthracene	0.5	12.0	103%	<0.5							
Chrysene	0.5	12.6	113%	<0.5							
Benzo(b)&(k)fluoranthene	1	22	101%	<1							
Benzo(a) pyrene	0.5	13.3	100%	<0.5							
Indeno(1,2,3-c,d)pyrene	0.5	5.8	102%	<0.5							
Dibenz(a,h)anthracene	0.5	2.5	108%	<0.5							
Benzo(g,h,i)perylene	0.5	6.4	100%	<0.5							
Sum of reported PAHs	--	149.3	--	--							
2-FBP (Surr @ 5mg/kg)	--	*94%*	*89%*	*99%*							
TP-d14 (Surr @ 5mg/kg)	--	*99%*	*91%*	*94%*							

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E007.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/MS.

Laboratory Identification		**197148**	**crm**	**lcs**	**mb**						
Sample Identification		BDB1/110209	QC	QC	QC						
Depth (m)		--	--	--	--						
Sampling Date recorded on COC		11/2/09	--	--	--						
Laboratory Extraction (Preparation) Date		17/2/09	17/2/09	17/2/09	17/2/09						
Laboratory Analysis Date		18/2/09	18/2/09	18/2/09	18/2/09						
Method : E022.2											
Acid extractable metals (M7)	**EQL**										
Arsenic	1	3	114%	93%	<1						
Cadmium	0.1	0.1	98%	97%	<0.1						
Chromium	1	11	115%	104%	<1						
Copper	2	58	112%	102%	<2						
Nickel	1	11	108%	99%	<1						
Lead	2	143	105%	104%	<2						
Zinc	5	137	101%	98%	<5						

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E022.2: 0.5g digested in nitric/hydrochloric acid. Analysis by ICP-MS.

Laboratory Identification		**197148**	**crm**	**lcs**	**mb**						
Sample Identification		BDB1/110209	QC	QC	QC						
Depth (m)		--	--	--	--						
Sampling Date recorded on COC		11/2/09	--	--	--						
Laboratory Extraction (Preparation) Date		17/2/09	17/2/09	17/2/09	17/2/09						
Laboratory Analysis Date		18/2/09	17/2/09	17/2/09	17/2/09						
Method : E026.2											
Acid extractable metals - mercury	**EQL**										
Mercury	0.05	0.38	96%	91%	<0.05						

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E026.2: 0.5g digested with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS.

LabMark
ENVIRONMENTAL LABORATORIES

Laboratory Report No: E041669
Client Name: Douglas Partners
Contact Name: Jessica Derrien
Client Reference: Chippingdale (UTS) Environmental Asses. 45996.01

Date: 19/02/09
This report supercedes reports issued on: N/A

Final
Certificate
of Analysis

Laboratory Identification		**197148**
Sample Identification		BDB1/110209
Depth (m)		--
Sampling Date recorded on COC		11/2/09
Laboratory Extraction (Preparation) Date		17/2/09
Laboratory Analysis Date		18/2/09
Method : E005.2		
Moisture	**EQL**	
Moisture	--	18

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

LabMark
ENVIRONMENTAL LABORATORIES

Quality, Service, Support

Report Date : 13/02/2009
Report Time : 6:04:13PM

Sample Receipt Notice (SRN) for E041669

Client Details		Laboratory Reference Information	
		Please have this information ready when contacting Labmark.	
Client Name:	Douglas Partners	Laboratory Report:	**E041669**
Client Phone:	02 9809 0666	Quotation Number:	- Not provided, standard prices apply
Client Fax:	02 98094095	Laboratory Address:	Unit 1, 8 Leighton Pl. Asquith NSW 2077
Contact Name:	Jessica Derrien		
Contact Email:	Jessica.derrien@douglaspartners.com.au	Phone:	61 2 9476 6533
Client Address:	96 Hermitage Road West Ryde NSW 2114	Fax:	61 2 9476 8219
		Sample Receipt Contact:	Ros Schacht
Project Name:	Chippingdale (UTS) Environmental Asses.	Email:	Ros.Schacht@labmark.com.au
Project Number:	45996.01	Reporting Contact:	Leanne Boag
CoC Serial Number:	- Not provided -	Email:	leanne.boag@labmark.com.au
Purchase Order:	- Not provided -		
Surcharge:	No surcharge applied (results by 6:30pm on due date)		
Sample Matrix:	SOIL		
Date Sampled (earliest date):	11/02/2009	NATA Accreditation:	13542
Date Samples Received:	13/02/2009	TGA GMP License:	185-336 (Sydney)
Date Sample Receipt Notice issued:	13/02/2009	APVMA License:	6105 (Sydney)
Date Preliminary Report Due:	20/02/2009	AQIS Approval:	NO356 (Sydney)
Client TAT Request Date:	20/02/2009	AQIS Entry Permit:	200521534 (Sydney)

Reporting Requirements: Electronic Data Download required: No

Invoice Number: 09EA2810

Sample Condition: COC received with samples. Report number and lab ID's defined on COC.
Samples received in good order .
Samples received with cooling media: Crushed ice .
Samples received chilled.
Security seals not used .
Sample container & chemical preservation suitable .

Comments:

Holding Times: Date received allows for sufficient time to meet Technical Holding Times.

Preservation: Chemical preservation of samples satisfactory for requested analytes.

Important Notes:
LabMark shall responsibly dispose of spent customer soil and water samples which includes the disintegration of the sample label. A sample disposal fee of $1.00 is applicable on all samples received by the laboratory regardless of whether they have undergone analytical testing. Sample disposal of environmental samples shall be 31 days (water) and 3 months (soil, HN03 preserved samples) after laboratory receipt, unless otherwise requested in writing by the client. Samples requested to be held in non-refrigerated storage shall incur $5.00/ sample/ 3 months. Additional refrigerated storage shall incur $30/ sample/ 3 months. Combination prices apply only if requested. Transfer of report ownership from LabMark to the client shall occur once full and final payment has been settled and verified. All report copies may be retracted where full payment does not occur within the agreed settlement period.

Analysis comments:

Subcontracted Analyses:

Thank you for choosing Labmark to analyse your project samples.
Additional information on www.labmark.com.au

LabMark
ENVIRONMENTAL LABORATORIES

Quality, Service, Support

Report Date : 13/02/2009
Report Time : 6:04:13PM

Sample Receipt Notice (SRN) for E041669

The table below represents LabMark's understanding and interpretation of the customer supplied sample COC request (refer to SRN comments section on first page for external subcontracting method details). Please confirm that your COC request has been entered correctly. Due to THT and TAT requirements, testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.

GRID REVIEW TABLE				Requested Analysis																			
No.	Date	Depth	Client Sample ID	Acid extractable metals - mercury	Acid extractable metals (M7)	Moisture	Polyaromatic Hydrocarbons (PAH)	PREP Not Reported															
197148	11/02		BDB1/110209	●	●	●	●	●															
			Totals:	1	1	1	1	1															

'PREP Not Reported' refers to an internal laboratory instruction - client confirmation of this parameter is not required.

Thank you for choosing Labmark to analyse your project samples.
Additional information on www.labmark.com.au

LabMark
ENVIRONMENTAL LABORATORIES

Quality, Service, Support

Report Date : 13/02/2009
Report Time : 6:04:13PM

Sample **Receipt** Notice (SRN) for **E041669**

No.	Date	Depth	Client Sample ID	Requested Analysis: M8 - M7-T_S																			
197148	11/02		BDB1/110209	●																			
			Totals:	1																			

Thank you for choosing Labmark to analyse your project samples.
Additional information on www.labmark.com.au

E041669

Inter-lab duplicate

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: CHIPPING DALE (CUTS) ... Environmental Assessment
Project No: 45994.01 Sampler: WFY
Project Mgr: PK Mob. Phone: 0418 279 129
Email: jessica.dennen@douglaspartners.com.au
Date Required: standard Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W - water	Container type	Analytes: Heavy Metals	BTEX/ TPH	OCPs/ PCBs	PAH	Phenols	Asbestos							Other	Notes
BOB1/HOLE9 -			1-02-09	S	197148	✓			✓										

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by: JMO / PCC Signed: Date & Time: 12-02-09/3pm Received By: Date & Time: 13/2/09 @ 4:30pm.
Relinquished by: Signed: Date & Time: Received By: Date & Time:

APPENDIX E
Quality Assurance/Quality Control Results

QA/QC PROCEDURES AND RESULTS

Quality assurance and control formed an integral part of this assessment. The results of the QA/QC assessments are detailed below.

The Data Quality Indicators (DQI's) have been addressed within the report as follows in Table Q1.

Table Q1 – DQIs and Evaluation Procedures

DQI	Evaluation Procedure
Documentation completeness	Completion of field and laboratory documentation including chain of custody, test bore reports.
Data completeness	Sampling density appropriate for preliminary assessment, analysis of appropriate contaminants, analysis of appropriate soil horizons, analysis of appropriate QA samples etc
Data comparability	Use of NATA accredited analytical methods, use of consistent sampling technique, commitment to equipment decontamination, field sample storage techniques etc.
Data representativeness	Sampling from targeted areas and a broad grid pattern across the site in order to obtain samples representative of contamination present.
Precision and accuracy for sampling and analysis	Use of NATA accredited analytical methods, achievement of 30-50% RPD for replicate analysis (as appropriate) and achievement of laboratory QC criteria.

As indicated above, the DQIs for sampling and analysis were achieved and the quality of the data satisfactorily meets the objectives of the current assessment.

FIELD QUALITY ASSURANCE AND QUALITY CONTROL

The field QC procedures for sampling as prescribed in Douglas Partners *Field Procedures Manual* were followed during the assessment. Field QA sampling comprised replicate sampling, at a rate of approximately one replicate sample for every ten original samples.

Rinsate Sample

A rinsate sample was not collected as disposable sampling equipment (nitrile gloves and bailers) were used to conduct the investigation.

Trip Spike

According to *the NSW EPA Guidelines for Consultants Reporting on Contaminated Sites (1997)*, laboratory prepared trip spikes are to be taken into the field, subjected to the same preservation methods as the field samples, then analysed, for the purposes of determining the losses in volatile organics incurred prior to reaching the laboratory.

The practicalities of trip spikes are currently being debated and a detailed procedure is yet to be finalised. Discussions with the laboratory indicated that trip spikes are generally prepared as aqueous solutions. The laboratory prepared a soil trip spike which was preserved in the standard manner and taken into the field unopened. At this stage, the laboratory has no standard acceptance limits in recovery rates as results from in-house laboratory controls often vary. Results are presented in Table Q2 below and indicated that the percentage loss for BTEX during the trip was within acceptable limits.

Table Q2 – Results for Laboratory Analysis for Trip Spike Analysis

Sample ID	Benzene	Toluene	Ethyl-benzene	Xylene
Trip Spike	103%	110%	104%	107/106%

Trip Blank

A laboratory prepared trip blank for soil was taken out to the field unopened, subjected to the same preservation methods as the field samples, and then analysed for volatile contaminants (TPH & BTEX) for the purposes of determining the transfer of contaminants into the blank sample incurred prior to reaching the laboratory. The results of the laboratory analysis for the trip blanks are shown in Table Q3.

Table Q3 - Results of Laboratory Analysis for Trip Blank Samples

Sample ID	Benzene	Toluene	Ethyl-benzene	Xylene
Trip Blank	<0.5	<0.5	<1	<3

Levels of analytes were all below detection limits, indicating that cross contamination with volatile contaminants and heavy metals had not occurred during the course of the round trip from the site to the laboratory.

Relative Percentage Difference

A measure of the consistency of results for field samples is derived by the calculation of relative percentage differences (RPDs) for replicate samples. A RPD of ± 30% is generally considered acceptable for inorganic analytes by EPA, although in general a wider RPD range may be acceptable for organic analytes.

INTRA-LABORATORY ANALYSIS

Intra-laboratory duplicates were conducted as an internal check of the reproductively within the primary laboratory (Envirolab Pty Ltd) and as a measure of consistency of sampling techniques.

The comparative results of analysis between original and replicates are summarised in the tables below.

Table Q4 - RPD Results - Soil

Sample ID	Heavy Metals								PAH	
	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Total	B(a)P
6/1.2-1.5	7	<0.5	14	45	77	0.3	13	230	13.3	1
BD1/040209	7	<0.5	13	18	52	0.2	11	22	9.3	0.7
Difference	0	0	1	27	25	0.1	2	208	4	0.3
RPD (%)	**0**	**0**	**7**	**86**	**39**	**40**	**17**	**165**	**35**	**35**
9/0.2-0.5	4	0.6	11	75	1500	0.3	9	500	67.4	7.2
BDA/110209	4	0.6	12	77	720	0.4	8	460	116.8	10
Difference	0	0	1	2	780	0.1	1	40	49.4	2.8
RPD (%)	**0**	**0**	**9**	**3**	**70**	**29**	**12**	**8**	**54**	**33**
11/0.2-0.5	<4	<0.5	15	65	150	0.4	15	140	128.3	15
BDB/110209	<4	<0.5	13	68	160	0.5	16	140	139.4	16
Difference	0	0	2	3	10	0.1	1	0	11.1	1
RPD (%)	**0**	**0**	**14**	**5**	**6**	**22**	**6**	**0**	**8**	**6**

Table Q5 - RPD Results - Groundwater

Sample ID	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Total PAH	B(a)P
GW24	<1	0.2	<1	<1	<1	<0.5	1	21	<2	<1
BD1/221208	<1	<0.1	<1	<1	<1	<0.5	1	11	<2	<1
Difference	0	0.1	0	0	0	0	0	10	0	0
%RPD	**0**	**67**	**0**	**0**	**0**	**0**	**0**	**63**	0	0

Table Q6 - RPD Results - Groundwater

Sample ID	TPH		Benzene	Toluene	Ethylbenzene	Total Xylene	VOCs	OCP/OPP	PCB	Total Phenols
	C6-C9	C10-C36								
GW24	<10	<100	<1.0	<1.0	<1.0	<2.0	<10	<0.2	<2	<0.05
BD1/221208	<10	<100	<1.0	<1.0	<1.0	<2.0	<10	<0.2	<2	<0.05
Difference	0	0	0	0	0	0	0	0	0	0
%RPD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

INTER-LABORATORY ANALYSIS

Inter-laboratory duplicates were conducted as a check of the reproductively of results between the primary laboratory (Envirolab Pty Ltd) and a secondary laboratory (Labmark Pty Ltd) and as a measure of consistency of sampling techniques.

The comparative results of analysis between original and replicates are summarised in the table below.

Table Q7 - RPD Results

Sample ID	Heavy Metals								PAH	
	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Total	B(a)P
11/0.2-0.5	<4	<0.5	15	65	150	0.4	15	140	128.3	15
BDB/110209	3	0.1	11	58	11	-	137	143	149.3	0.5
Difference	1	0.4	4	7	139	-	122	3	21	14.5
RPD (%)	**29**	**133**	**31**	**11**	**173**	**-**	**161**	**2**	**15**	**187**

The calculated RPD values for soil sample 6/1.2-1.5 and its replicate BD1/040209 were within the acceptable range of ± 30% with the exception of copper (86%), lead (39%), mercury (40%), zinc (165%), total PAH (35%) and B(a)P(35%). The RPD values for soil

sample 9/0.2-0.5 and its replicate BDA/110209 were within the acceptable range of ± 30% with the exception of lead (70%), total PAH (54%) and B(a)P(33%). The RPD values for soil sample 11/0.2-0.5 and its replicate BDB/110209 were within the acceptable range of ± 30% with the exception of cadmium (133%), cromium (31%), lead (173%), nickel (161%) and B(a)P(187%).

However, it is considered that the elevated RPD do not materially compromise the analytical results obtained, as:

- Replicate samples were collected instead of duplicate samples to minimise the loss of volatiles, hence there is potential for slight differences in composition between the two;
- The heterogeneous nature of the filling samples.

The calculated RPD values for the groundwater sample GW24 and its replicate BD1/221208 exceeded the range of ± 30% for cadmium (67%) and zinc (63%). However, this is not considered to be of concern due to:

- The low actual difference between the concentrations; and
- The concentrations being at/ close to the practical quantitation limit.

It is therefore considered that the results indicate an acceptable consistency between the samples and their replicates and indicate that suitable field sampling methodology was adopted and laboratory precision was achieved.

LABORATORY QA/QC PROCEDURES

The analytical laboratory is accredited by the National Association of Testing Authorities (NATA) and is required to conduct in-house QA/QC procedures. These are normally incorporated into every analytical run and include the following:-

Reagent Blank

A reagent blank sample is prepared and analysed at the beginning of every analytical run, following calibration of the analytical apparatus. The laboratory results for reagent blanks for soil analysis indicated that concentrations of all analytes were below respective

laboratory practical quantitation (detection) limits. These results are included in the laboratory report in Appendix E.

Spike Recovery

This is a sample replicate prepared by adding a known amount of analyte prior to analysis, and then treated exactly the same as all other samples. The recovery result indicates the proportion of the known concentration of the analyte that is detected during analysis. These results are included in the laboratory report in Appendix E.

The spike recovery rates are compared with limits as specified in Envirolab Services Quality Control System, and any exceedances are highlighted in the report.

As no exceedances and no comments were noted on the report, it is considered that the results indicate that the analytical results are not significantly affected by matrix interference.

Surrogate Recovery

This sample is prepared by adding a known amount of surrogate, which behaves similarly to the analyte, prior to analysis to each sample. The recovery result indicates the proportion of the known concentration of the surrogate that is detected during analysis.

As no exceedances and no comments were noted on the report, it is considered that the results indicate that the analytical results are not significantly affected by matrix interference.

Duplicates

These are additional portions of a sample which are analysed in exactly the same manner as all other samples. The duplicate sample results are included in the laboratory results in Appendix E.

In overall terms, therefore, the data quality objectives have been attained and the quality of the investigation data is considered acceptable.