Phase 2 Environmental Site Assessment

Hurstville Private Hospital
37 Gloucester Road
Hurstville, NSW

Continuum Healthcare Group
c/o Inspira Planning and Development

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JBS 41486 - 16764
JBS Environmental Pty Ltd

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List of Abbreviations

A list of the common abbreviations used throughout this report is provided below.

ACM	Asbestos Containing Material
AEC	Areas of Environmental Concern
AHD	Australian Height Datum
As	Arsenic
bgs	below ground surface
BTEX	Benzene, toluene, ethylbenzene and xylenes
B(a)P	Benzo(a)pyrene
Cd	Cadmium
COC	Chain of Custody
COPC	Constituents of Potential Concern
Cr	Chromium
CSM	Conceptual site model
Cu	Copper
DECC	NSW Department of Environment and Climate Change (now the DECCW)
DECCW	NSW Department of Environment, Climate Change and Water
DMR	NSW Department of Minerals Resources
DO	Dissolved Oxygen
DoP	NSW Department of Planning
DQI	Data Quality Indicator
DQO	Data Quality Objective
DWE	NSW Department of Water and Energy
EC	Electrical Conductivity
Eh	Reduction-Oxidation Potential (Redox) Potential
EPA	NSW Environment Protection Authority (now the DECCW)
ESA	Environmental Site Assessment
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
Ha	Hectare
Hg	Mercury
HIL	Health based investigation level
JBS	JBS Environmental Pty Ltd
LEP	Local Environment Plan
LOR	Limit of Reporting
NATA	National Association of Testing Authorities
Ni	Nickel
NR	Natural Resources
NSW	New South Wales
OCP	Organochlorine Pesticides
OPP	Organophosphorous Pesticides
PAHs	Polycyclic aromatic hydrocarbons
Pb	Lead
PBIL	Phytotoxicity Based Investigation Levels

PCB	Polychlorinated Biphenyls
pH	Measurement of the acid or base content of a solution
QA/QC	Quality Assurance / Quality Control
RPD	Relative Percentage Difference
SCID	Stored Chemical Information Database
TPH	Total Petroleum Hydrocarbons (C_6-C_9 and C_{10}-C_{36})
WQC	Water Quality Criteria
Zn	Zinc

Executive Summary

Introduction and Background

JBS Environmental Pty Ltd (JBS) was engaged by Inspira Developments Pty Ltd (Inspira) on behalf of Continuum Healthcare Group Pty Ltd to undertake a Phase 2 Environmental Site Assessment (ESA) on the Hurstville Private Hospital, located at 37 Gloucester Road, Hurstville, NSW. The site area is approximately 7700 m^2, and consists of two areas: the hospital land and a car park located at 12 Millett Street.

It is understood that the owners of the site are considering redevelopment of the property to incorporate a mixed land use, comprising a redeveloped hospital and residential apartments with landscaped gardens. A Phase 2 ESA has been conducted as part of the development process requirements to determine whether the site is suitable for the proposed land use.

A previous Phase 1 assessment (JBS 2010) concluded that there were potential sources of contamination present resulting from the piecemeal absorption over time of individual Lots into the greater hospital site, and the former and current use of the site as a hospital.

Scope of Works

The scope of works undertaken included an intrusive soil sampling program including a total of 19 soil bores, the installation, development and sampling of 4 groundwater monitoring wells within the boundaries of the site, completion of a quality assurance / quality control program and production of a Phase 2 ESA report summarising both soil and groundwater issues on site.

Summary of Assessment

Concentrations in soil samples were below the site criteria for TPH, BTEX, OCP, OPP and PCB compound. Concentrations of heavy metals and PAHs in soil samples analysed were less than the adopted criteria for the adopted criteria with the exception of lead at two locations and PAH at one location. 95% upper confidence limit (UCL) statistics were conducted on the data sets in accordance with **Section 6**, and resulting UCL concentrations were reported below the site criteria.

Chrysotile and amosite asbestos were confirmed as present in ACM fragment sample F1, which was collected on the ground surface at BH03/MW03. Asbestos fibres were not identified in any soil sample analysed, either from samples collected directly beneath the fragments, or from surface samples across the general site area.

Concentrations in groundwater samples were below the site criteria for heavy metals, TPH, BTEX, PAHs, OCP, OPPs and PCBs

Conclusions and Recommendations

Based on the findings of this investigation and subject to the limitations in **Section 12**, conclusions are as follows:

- There were no unacceptable risks to onsite future receptors from soils;
- There were no unacceptable risks to onsite future receptors from groundwater;
- There were no odorous or stained soils observed on the site, and all aesthetic issues have been addressed;

- Based on the analysis of the soil and groundwater on the site, there are no background contaminant levels that require consideration;
- There are no unacceptable human health risks posed by potential chemical mixtures;
- There is no evidence of, or potential for, migration of contaminants from site; and
- Remediation or on-going management is not required.

The following action is recommended:

- Due to the working nature of the hospital, sample locations were placed around the perimeter of the building to minimise interference. Additional soil sample locations should be undertaken underneath the footprint of the building following demolition works to ensure no additional contamination is present. This particularly important given that the hospital has developed overtime by incorporating areas that may have previously been used for contaminating activities associated with the operation of the hospital in its earlier forms; and
- Prior to demolition of the buildings, a hazardous material survey should be undertaken to identify any buildings which may contain hazardous material (such as ACM or lead paint).

1 Introduction

1.1 Introduction and Background

JBS Environmental Pty Ltd (JBS) was engaged by Inspira Developments Pty Ltd (Inspira) on behalf of Continuum Healthcare Group Pty Ltd to undertake a Phase 2 Environmental Site Assessment (ESA) on the Hurstville Private Hospital, located at 37 Gloucester Road, Hurstville, NSW (the site) (**Figures 1** and **2**).

The site area is approximately 7700 m^2, and consists of the following two areas: the hospital land (approximate area of 6680 m^2); and a car park located at 12 Millett Street (approximate area of 980 m^2).

It is understood that Hurstville Council is currently preparing a new Local Environmental Plan (LEP) which complies with the Department of Planning (DoP) template and guidelines for the new planning instrument. The currently adopted Council policy would see all Hospital owned land zoned low density residential. As such, the owners of the site are considering redevelopment of the property to incorporate a mixed land use, comprising a redeveloped hospital and residential apartments with landscaped gardens.

A rezoning application is being developed to present to Council to support the proposed development and part of the development process requires a Phase 2 ESA of the land to be undertaken to determine whether the site is suitable for the proposed land use.

A Phase 1 ESA (JBS 2010[1]) was undertaken as part of the development process to determine whether potential areas of contamination were present, and if additional assessment and/or remediation was required. The assessment concluded that there were potential sources of contamination present resulting from the piecemeal absorption over time of individual Lots into the greater hospital site, and the former and current use of the site as a hospital. An intrusive soil and groundwater assessment was recommended to identify any contamination associated with the historical and current use of the land.

The Phase 2 ESA was developed in general accordance with relevant guidelines made or approved by the NSW Department of Environment, Climate Change and Water (DECCW incorporating the EPA).

1.2 Objectives

The objectives of the Phase 2 ESA were to collect soil and groundwater data from across the site (including targeted areas) to assess the suitability of the site for the proposed end landuse. Further, the outcome of the Phase 2 ESA was to be documented to support the redevelopment application, or to recommend any remediation or management that may be required to make the site suitable for the proposed end landuse.

1.3 Scope of Work

The scope of works undertaken included:

- An intrusive soil sampling program, including a total of 19 soil bores extended into the underlying natural material using both hand tools and a small drill rig. Soil samples were analysed for constituents of potential concern (COPC), including heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene,

[1] Environmental Site Assessment Phase 1, Hurstville Private Hospital, 37 Gloucester Road, Hurstville, NSW, JBS Environmental Pty Ltd, JBS41390-15930, November 2010 (JBS 2010)

ethyl-benzene and xylenes (BTEX), petroleum aromatic hydrocarbons (PAHs), organochlorine pesticides (OCP), organophosphorous pesticides (OPP), polychlorinated biphenyls (PCB) and asbestos, as indicated by the results of the Phase 1 ESA;

- The installation and development of 4 groundwater monitoring wells within the boundaries of the site, and a subsequent groundwater monitoring event (GME) with groundwater samples analysed for heavy metals, TPH, BTEX, PAHs, OCPs, OPPs and PCBs;
- Completion of a quality assurance/quality control (QA/QC) program of sampling methods and laboratory analysis; and
- Production of a Phase 2 ESA report summarising both soil and groundwater issues (if any) on site.

2 Site Condition & Surrounding Environment

2.1 Site Identification

The location of the site is shown in **Figure 1**. The site details are summarised in **Table 2.1** and described in detail in the following sections.

Table 2.1 Summary Site Details

Lot/DP	Lots A & B DP400487 Lots 2 & 5 DP16273 Lots C1 & C2 DP377900 Lots A & B DP375463 Lots 12 & 20, Section D DP1426 Lots 1 & 2 DP1045223
Address	37 Gloucester Road, Hurstville (Hospital) 12 Millett Street, Hurstville (Hospital owned car park)
Co-ordinates (to approximate centre of site	33°57' 44.43"S 151° 05' 44.61"E
Local Council	Hurstville City Council
County	Cumberland
Parish	St. George
Site Zoning	Zone 5(a) General Special Uses Zone (Hospital) Zone 2 Residential Zone (12 Millett Street)
Previous Use	The site was formerly low density residential before being used as a hospital
Current Use	Hospital – 37 Gloucester Road, Hurstville Car Park – 12 Millett Street, Hurstville
Proposed Use/s	The site is proposed to be redeveloped to include medium to high density residential, with an area of open space and a hospital
Site Area	Approximately 7700 m^2

2.2 Site Description

The site is roughly 'U' shaped, comprising an overall rectangular area with three privately owned residential properties excised from the central west portion of the rectangle as shown in **Figure 2**, The site has an area of approximately 7700 m^2. The site is bound to the south by Pearl Street, to the west by Millett Street and to the east by Gloucester Road. To the north, and beyond the south, east and west bounding roads are low and medium density residential properties.

At the time of the fieldworks the site contained one large building, however, it should be noted that this building comprised several styles of building of a range of ages. A sealed driveway traversed the front, Gloucester Road portion of the site, providing vehicle access to the front reception of the hospital. Minimal doctor's car parking was observed at the northern extremity of this driveway. Between the driveway and the footpath along Gloucester Road an electrical substation and gas and water mains were observed within their own locked compounds. The south eastern corner (corner of Pearl Street and Gloucester Road) was covered by a lawn, and several landscaped gardens were evident.

The front of the hospital contained a building of early 1900's origin, and comprised the administrative section of the hospital. The glass fronted entrance to the building was observed as quite modern construction, with a reception area, a doctor's lounge, a reception office, and a small cafeteria. The central portion of the site, directly behind the reception area contained a small courtyard, with glass doors into the reception area, and a door into the cafeteria. The courtyard was completely paved and contained a water feature and several raised garden beds / potted plants. From the courtyard the differing ages of the buildings were evident, giving the impression that the hospital was built over time around the central courtyard.

The northern portion of the hospital contained a four storey building, which housed the majority of wards within the hospital. A narrow sealed single lane drive was located along

the northern boundary, traversing the western boundary between the hospital and the three privately owned residential Lots before joining on to Millett Street.

The rear section of the hospital contained the birthing rooms, fluids store, kitchen and amenities blocks. 12 Millett Street comprised a bitumen covered car park, and was visible from the north western corner of the hospital building.

The southern portion of the hospital comprised a three storey building, with the two lower floors containing car parking. On the basement level a locked caged area was observed as the hazardous materials compound, and contained several bottles of gas at the time of the inspection.

The hospital frontage onto Pearl Street comprised a chemist, a medical centre, and the day surgery wing. The plans provided by Inspira showed a radiology unit and surgical theatres located on the second storey.

The site sloped generally from north east to south west, with the Gloucester Road frontage being approximately 0.5 m to 1 m above the road, and the parking facility and loading docks in the south western portion of the site being situated approximately 1.5 m to 2 m below the level of both Pearl and Millett Streets. This lowered carpark was observed to comprise of shotcrete covered embankments which raised the level back to the adjacent street level. 12 Millett Street, which comprised a sealed car park, was situated approximately 1.5 m below the hospital grounds, and sloped gently from the east to the west.

Vegetation on the site appeared healthy and well maintained, and no areas of surface staining were noted during the previous inspection.

It should be noted that the site inspection was undertaken on the hospital grounds, and the front and central portions of the hospital. A full inspection of the working sections of the hospital buildings was not undertaken as part of the ESA inspection.

2.3 Surrounding Landuse

The current landuse of adjacent properties is shown in **Figure 2** and summarised below.

- North – Across Gloucester Road is low density residential;
- South – Across Pearl Street is low and medium density residential, followed by commercial industrial (including a smash repairs), and a school;
- East – Across the intersection of Pearl Street and Gloucester Road is low and medium density residential, with Hurstville Oval located approximately 200 m from the site; and
- West – Across Millett Street is low to medium density housing, followed by King Georges Road.

Based on review of the surrounding land uses by site inspection, surrounding residential properties are unlikely to be potential offsite sources. Due to the surrounding topographical features, it is considered unlikely that any of the nearby industrial / commercial premises are potential offsite sources of contamination.

2.4 Topography

A review of the online topographic map provided by the NSW Natural Resources Atlas Home (NSW NR 2010[2]) indicates that the site has an elevation ranging between 55 and 65 m Australian Height Datum (AHD). The site slopes from the south eastern corner to the north western portion of the site, with the highest point coinciding with the south eastern site corner boundary.

Topographical features noted include:

- The site boundary along Gloucester Road was observed as 0.5 to 1 m higher than the road reserve;
- The car park located at 12 Millett Street slopes from the north eastern corner to the south west, with a decline in elevation of approximately 1.5 m; and
- The loading dock and underground car park located on the south western corner of the site is 2 metres below Millett Street.

2.5 Hydrology

The closest surface water receptor is Poulton Creek, located approximately 1.25 km south of the site. Poulton Creek drains into Oatley Bay 700m further south, which ultimately drains into Botany Bay and the ocean. Hurstville falls within the boundary of the Georges River Catchment.

The majority of the rainfall at the site is expected to runoff the sealed surfaces in a general south to south westerly direction following the natural slope of the land where it will be diverted into the municipal storm water systems in Millett and Pearl Streets.

2.6 Geology

A review of the regional Sydney geological map (DMR 1966[3]) indicates the site is underlain by the Triassic age Wianamatta Group, consisting of Ashfield and Bringelly Shale. Typical characteristics of this formation include the presence of shale with some sandstone beds present.

The soils within the area are defined by the Soil Landscapes of Sydney (DNR 2009[4]) as Red Podzolic Soil, which is described as blackish brown sandy loam, with angular, sub-angular and sub-rounded, fine particles, with some gravel inclusions. Underlying this is a clay loam, at an approximate depth of 0.3 m, which consists of slight plasticity, medium density, red and brown clays.

Based on a review of the Acid Soil Sulphate Risk Map (2009)[5], the site has no occurrence of acid sulphate soil materials.

2.7 Hydrogeology

Registered groundwater bore information from the Department of Water and Energy (DWE) is included in JBS 2010.

[2] DNR (2009), NSW Natural Resource Atlas – http://www.nratlas.nsw.gov.au viewed on 8.11.2010
[3] Department of Minerals Resources (1966). Sydney Geological Series Sheet (3rd Edition) SI/5605.
[4] DNR (2009), NSW Natural Resource Atlas – http://www.nratlas.nsw.gov.au viewed on 9.11.2010
[5] DNR (2009), NSW Natural Resource Atlas – http://www.nratlas.nsw.gov.au viewed on 9.11.2010

Based on the review of DWE information, there are no registered groundwater bores within a 1.5 km radius around the site. Registered bores located 2.5 km east of the site were recorded as containing no water bearing zones.

Based on previous JBS experience in the area the water-bearing zones are predicted to be approximately 5 m below ground surface (bgs).

3 Site History

The historical information for the site was reviewed as part of the Phase 1 assessment (JBS 2010), and a summary is provided in the following sections.

3.1 General History

3.2 Aerial Photographs

Aerial photographs from 1930, 1951, 1961, 1970, 1979, 1988, 1994 and 2005 were obtained from the Land and Property Information Centre. These photographs are provided in the Phase 1 ESA (JBS 2010) and the summarised historical information is as follows:

- In 1930, the site appeared to consist of two residences, joined by what appeared to be a covered walkway. A large arc shaped driveway was evident joining the site to Gloucester Road in the northern and southern portions of the original site. The surrounding area appeared to be predominantly low density residential, with some industrial / commercial properties evident to the south along King Georges Road.
- In 1951, the site and surrounding area appeared unchanged from the previous photograph with the exception of an extension between the two buildings, making one large building on the site.
- In 1961, the site appeared unchanged in comparison to the previous photograph. An area one block to the west had been changed from a large open space, to contain 7 low density residential blocks.
- In 1970, the site appeared similar to the previous photograph with two exceptions. The residence directly to the north along Gloucester Road was no longer present and the land had been developed into a sealed carpark. Also, three large trees on the eastern and southern boundary of the site had been removed. The surrounding area appeared similar to the previous photograph with the clearing of an area directly south, which previously consisted of low density housing.
- In 1979, the site had been extended to the north, the car park which was evident in the 1970 photograph located at the northern boundary had been replaced with the extension of the building facing Gloucester Road. Additionally, the rear building containing the kitchen and store rooms had been added to the hospital. The surrounding area looked predominantly the same as the previous photograph, with the development of an area to the south into a large high rise building.
- In 1988, the site had undergone a significant change, with the property located on the corner of Gloucester Road and Pearl Street containing two large buildings, twice as large as the previously evident buildings. These two buildings are currently part of the hospital. South of two blocks to the south west of the site was a triangular area of vacant land, which was identified as containing low density residential properties in the 1979 photograph. In addition, the aged care facility which is currently located to the north of the hospital (100 m north) was evident.
- In 1994, the site appeared similar to the previous photograph, with two exceptions. An additional storey had been added to the portion of hospital along the northern Gloucester Road boundary, made evident in the photograph by the

lighter red roofing. Also, the newer portion of the hospital had been added on the corner of Pearl and Millett Streets. The area to the south west of the site had been developed with high rise buildings evident within the business sector, where previously vacant land was observed.

- In 2005, the site appeared similar to the previous photograph, and similar to what was observed during the site inspection, with the exception of 12 Millett Street. In 2005, there remained a residential building on the property identified as 12 Millett Street, with no sign of the paved car park which is present today.

3.3 Title Details

A historic title search was undertaken for the twelve Lots which make up the site. Results are included in JBS 2010 and summarised below.

Lots A & B in DP400487 – This parcel of land was originally one Lot, and was owned by a builder and a retired storekeeper between 1936 and 1957. Post 1957 the land was divided into 2 Lots. Both Lots were owned by private landowners (Lot A owners included a catering manager, widow, married woman, sales engineer, photoengraver and a technician. Lot B owners included a marine radio operator and a foreman rigger). Lot A was purchased by the Hurstville Community Co-Operative Hospital Ltd in 1990, and Lot B in 1993.

Lots 2 & 5 in DP16273 – Lot 2 was owned by a builder, the Australasian Catholic Assurance Company Ltd, and private landowners until 1992 when it was purchased by the Hurstville Community Co-Operative Hospital Ltd. Lot 5 was owned by a builder and a carpenter and joiner until 1972 when it was purchased by the Hurstville Community Co-Operative Hospital Ltd.

Lots 12, Sec D in DP1426 – Lot 12 was owned by private landowners (including a freeholder, a salesman, a paymaster and a widow) between 1887 and 1960. In 1960 the Lot was purchased by Hurstville Community Co-Operative Hospital Ltd.

Lot C1 and C2 in DP377900 – Lot C1 was owned by private landowners (spinsters) between 1927 and 1952, when it was purchased by the Goshen Co-Operative Community Hospital Limited. Lot C2 was owned by private landowners (including spinsters and a carpenter) between 1927 and 1958 when it was purchased by the Hurstville Community Co-Operative Hospital Ltd.

Lots A & B in DP375463 – This parcel of land was originally one Lot, and owned by spinsters, followed by a labourer until 1962. The land was subdivided into two separate Lots in 1962 with Lot A being owned by a motor mechanic, and an analyst programmer until 1977. Lot B was owned by a clerk until 1977. In 1977 both Lots were purchased by the Hurstville Community Co-Operative Hospital Ltd.

Lot 20, Sec D in DP1426– Lot 20 was owned by a carpenter, a commercial traveller, a railway clerk, a married woman, an iron moulder, a company director, and another party (occupation unknown) until 2005 when the property was purchased by Continuum Healthcare Property Pty Ltd.

Lots 1 & 2 in DP1045223 – Lot 1 was owned by a tinker yard manager, an engineer until 1987, and was purchased by the Hurstville Community Co-Operative Hospital Ltd in 1987. Lot 2 was owned by a delivery clerk, a foreman, an engineer, and was purchased by the Hurstville Community Co-Operative Hospital Ltd in 1987.

The Hurstville Community Co-Operative Hospital land has been owned by several groups throughout the last ten years, as summarised following:

- Hurstville Community Private Hospital Pty Ltd between 2000 and 2004;
- LCM Calvary Health Care Holdings Ltd between 2004 and 2007;
- Tuck Property Pty Ltd between 2007 and 2009; and
- Continuum Healthcare Property Pty Ltd since 2009.

3.4 Council Records

Planning Certificates were obtained from Hurstville City Council for the Lots which make up the hospital owned site. Planning Certificates are included in JBS 2010, and the information is summarised as follows:

- The site is zoned 5(a) Special Use (37 Gloucester Road) and 2 Residential (12 Millett Street);
- The land is not affected by the operation of Section 38 or Section 39 of the Coastal Protection Act, 1979;
- The land is not in an area proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961;
- The land is not subject to the Unhealthy Building Land Policy under the provisions of the Environmental Planning and Assessment Act 1979;
- The land is not affected by any road widening or road realignment policies;
- The land is not subject to a property vegetation plan under the Native Vegetation Act 2003;
- The land is not affected by any policies that restrict development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk;
- The land is not subject to flood related development controls;
- The land is not affected by Part 7A of the Threatened Species Conservation Act 1995;
- The land is not identified as significantly contaminated land, is not subject to a management order or is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997;
- In accordance with the Hurstville Local Environmental Plan 1994, a tree preservation order applies to land within Hurstville City Council jurisdiction; and
- The Council has developed a Policy for Potentially Contaminated Land which may restrict the development of this land. The policy is implemented when zoning or land use changes are proposed on lands which have previously been used for certain purposes.

3.5 DECCW Records

A search of the DECCW's public register under the *Protection of the Environment Operations Act 1997* was undertaken, and results are included in JBS 2010. The search identified that, for the site, there were:

- No prevention, clean-up or prohibition notices; and

- One environment protection licence was reported as no longer in force.

The previously registered license was granted to the Hurstville Community Private Hospital Ltd and was active between December 2000 and February 2008. The license allowed the transportation of clinical and related waste from the hospital facility to a NSW based waste facility for disposal.

A search was also undertaken through the DECCW's public contaminated land register (JBS 2010). The search identified that there have been no notices issued under the *Contaminated Land Management Act 1997* for the site.

It should be noted that no license was ever applied for or registered to the hospital for radiation based chemicals.

3.6 Australian and NSW Heritage Register

A search of the Australian Heritage Trust database and the NSW Heritage Inventory was undertaken as part of JBS 2010. It should be noted that the NSW Heritage Register search returned the Fertility First clinic, which is located opposite the hospital, and located at 50 Gloucester Road.

There are no registered heritage items at the site, and no other registered items within a close proximity of the site.

3.7 WorkCover Dangerous Goods Licenses

A WorkCover search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover was conducted as part of the Phase 1 ESA (JBS 2010). The WorkCover search was reported to have found no records of dangerous goods being stored or registered for the site.

3.8 Anecdotal Evidence

During the previous Phase 1 ESA (JBS 2010), an interview was undertaken with Mr Maurice Cattell who has been employed at the Hurstville Private hospital in the maintenance department. The following anecdotal information was ascertained from the interview:

- The hazardous material area is currently located in the lower car park, previous to this the location was unknown;
- The hazardous material compound consists of medical gases (*i.e.*, nitrous oxide, oxygen);
- No other hazardous materials have reportedly been stored within the site boundaries;
- There is a backup diesel generator on the site, however, this is situated on a sealed concrete slab, with ventilation and preventative maintenance which is undertaken every 6 weeks;
- All landscaping and grounds keeping on the site is undertaken by an independent contractor. No landscaping or gardening equipment is kept within the site (including lawnmowers and subsequent fuels); and

- The property located at 12 Millett Street was transformed into a carpark within the last 2 years. The building was demolished at least 6 months prior to this, and was reportedly a duplex residential property.

3.9 Site History Summary

A summary of the site history is provided in **Table 3.1**.

Table 3.1 Summary Site History

Period	Activity	Source
1952	Lot C1 DP377900 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
1958	Lot C2 DP377900 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
1960	Lot 12, Sec D DP1426 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
	Lot 12, Sec D DP1426 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
Pre 1970	Hospital site was extended to absorb the former residence located to the north along Gloucester Rd, which is being used as a car park.	Aerial Photographs
1972	Lot 5 DP16273 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
1977	Lots 12 A&B DP 375463 were purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
Pre 1979	Hospital buildings were extended north (rooms), and west (kitchen / amenities).	Aerial Photographs
1987	Lots 1 & 2 DP1045223 were purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
Pre 1988	Hospital buildings were extended south to include the land located on the corner of Pearl St and Gloucester Rd.	Aerial Photographs
1990	Lot A DP400487 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
1992	Lot 2 DP16273 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
1993	Lot B DP400487 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
Pre 1994	The hospital was extended by an additional storey within the northern portion of the site, and the extension of the building over the area located on the corner of Millett St and Pearl St.	Aerial Photographs
2000	The hospital lands were held by the Hurstville Community Private Hospital Pty Ltd.	Title Details
	License to transport clinical and related waste from the hospital was granted.	
2004	The hospital land was held by LCM Calvary Health Care Holdings Ltd.	Title Details
2005	Lot 20, Sec D DP1426 was purchased by the Hurstville Community Co-Operative Hospital Ltd.	Title Details
2007	The hospital lands were held by the Tuck Property Pty Ltd.	Title Details
2008	The license to transport clinical and related waste was no longer applicable.	DECCW Records
	The land recently obtained on Millett St (Lot 12) was sealed into a car park	Anecdotal Evidence
2009	The hospital lands were held by the Continuum Healthcare Property Pty Ltd.	Title Details

3.10 Integrity Assessment

The information obtained from sources noted above was found to be in general agreement regarding the history of the site. Based on the range of sources providing information and the general consistency of this information, it was considered that the historical assessment has an acceptable level of accuracy.

4 Previous Investigations

4.1 Environmental Site Assessment Phase 1 (JBS 2010)

JBS was engaged by Inspira on behalf of Continuum Healthcare Group Pty Ltd to conduct a Phase 1 Environmental Site Assessment on the Hurstville Private Hospital located at 37 Gloucester Road, Hurstville, NSW.

The Phase 1 ESA was undertaken as part of the development process to determine whether there are any potential areas of contamination, and whether it required additional assessment and/or remediation in order to be rezoned or redeveloped.

The scope of works consisted of a desktop study, a detailed site inspection, preparation of a conceptual site model and the provision of a Phase 1 ESA Report.

Based on the review of published and historical information, as well as the site inspection, the areas of environmental concern identified were as follows:

- Fill material historically placed on the site;
- Former (unknown) and current location of the backup generator;
- Current and former car parking areas;
- Buildings and structures of various ages across the site; and
- Hazardous materials store.

Potentially contaminated media includes fill materials, natural soils and groundwater.

The conclusions are recommendations of the Phase 1 ESA were as follows:

- The site was formerly used for low density residential, was subsequently developed into the Private Hospital, and then added to piecemeal as the surrounding properties were absorbed into the larger hospital site;
- Due to the piecemeal absorption of each Lot into the larger site, and the lack of previous environmental reports, the unknown source of fill material across the site poses a potential contamination risk;
- Areas of the site have historically been used for car parking and vehicle access facilities;
- Areas of the site have been historically and/or currently used for hazardous materials storage, including medical gas and generator fuel stores;
- Areas of Environmental Concern (AECs) include the fill material across the site, the soils underlying the current and former car parking and vehicle access, the areas under the hazardous materials storage facilities; and
- The potentially contaminated media includes fill materials, natural underlying soils, and a minimal risk to groundwater.

Based on the results of the Phase 1 ESA, it was considered that there were potential sources of contamination present resulting from the piecemeal absorption over time of individual Lots into the greater hospital site, and the former and current use of the site as a hospital.

It was recommended that an intrusive soil and groundwater assessment, targeting the AECs identified, be undertaken to identify any contamination associated with the historical and current use of the site.

5 Conceptual Site Model

5.1 Potential Areas of Environmental Concern

Based on the Phase 1 ESA, the AECs have been identified and are presented in **Table 4.1**.

Table 4.1 Areas of Environmental Concern and Associated Constituent of Potential Concern

Area of Environmental Concern	Constituents of Potential Concern
Fill historically placed on the site	Heavy metals, TPH/BTEX, PAHs, OCP/OPPs, PCBs, asbestos
Former (unknown) and current location of the backup generator	TPH, PAHs, lead
Current and former car parking areas	TPH, PAHs, lead
Buildings and structures of various ages across the site	Heavy metals, PCBs, asbestos
Hazardous material stores	Heavy metals, TPH/BTEX, PAHs, OCP/OPPs, PCBs, asbestos

AECs on the site are identified on **Figure 3.**

5.2 Potentially Contaminated Media

Potentially contaminated media present at the site include:

- Fill material;
- Natural soils; and
- Groundwater.

Due to the varying elevation of the site compared to surrounding properties, fill material is assumed to be present across the site. The source of fill material is unknown, however it is suggested that fill would have been used for levelling the site. As the fill material underlying the site has unknown origins it must be assumed to be a potentially contaminated medium.

Based on the potential leachability of the contaminants in the fill and the historical uses of the site, vertical migration of contaminants through the fill into the underlying natural soils may have occurred.

Groundwater is identified as a potentially contaminated medium due to the potential historic and current presence of hazardous material storage at the site (including fuels for back up generators), as well as current and historical site activities.

Surface water is not identified as a potentially contaminated medium based on the sealed nature of the site. Areas of surface water are substantially absent from the site.

5.3 Potential for Migration

Contaminants generally migrate from site via a combination of rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The potential contaminants identified as part of the site history review and site inspection includes liquids (*i.e.* petroleum products).

The entire site is generally paved with the exception of garden areas along the eastern boundary. The site pavement restricts the potential for windblown contaminants to migrate from the site.

The potential for contaminants to migrate via surface water runoff from the site is considered low, based on the sealed nature of the site.

Rainfall infiltration at the site is expected to be very low as a result of the site pavement. However, the potential presence of historical, and the known presence of a diesel generator at the site introduces a potential contamination risk. Based on the proximity of groundwater beneath the site, there is a potential for migration of hydrocarbon contaminants via groundwater flow within the underlying sandstone formation.

Manmade preferential pathways for the migration of COPCs are generally not present under the site apart from high permeability materials contained within fill material placed over the site, and utility and connected pipe work trenches within the site which may act as pathways for the migration of shallow seepage water. However, these services are present well above the predicted depth to groundwater.

Natural preferential pathways include seepage through unsealed surface cover, seepage from service pits and trenches into the natural soil profile, surface water runoff and groundwater passage beneath the site.

5.3.1 Potential Exposure Pathways

The exposure pathways considered to be potentially complete include:

- Inhalation of COPC vapours migrating upwards from impacted soil or groundwater, either in indoor structures or outdoors; and/or
- Potential dermal and oral contact to soil or groundwater within excavations extending below the surface soils or into groundwater.

Given the historical and current presence of liquid COPCs on the site there is the potential for vapours to migrate both laterally and vertically into buildings and/or into nearby underground service pits and trenches. Potential receptors of vapours are users of the building and maintenance workers working on underground services.

As groundwater extraction has not been identified at or within the vicinity of the site (no registered wells within 1.5 km radius of the site), a complete exposure pathway to extracted groundwater (*i.e.* irrigation, potable supply) has not been identified.

5.3.2 Potential Receptors

Potential receptors of groundwater or potential COPCs that may be present at the site include:

- Excavation/ construction/ maintenance workers conducting sub-surface investigations at or in the vicinity of the site, who may potentially be exposed to COPCs through inhalation of vapours or via direct dermal contact with impacted soil or groundwater via excavations;
- Site staff, site clients and neighbouring residents potentially exposed to COPCs though migration of vapours of COPCs to the surface; and/or
- The ecosystem surrounding Poulton Creek (located approximately 1.25 km south of the site), into which groundwater containing any COPCs may issue.

6 Sampling and Analysis Plan

6.1 Data Quality Objectives

Data Quality Objectives (DQOs) were developed for the Phase 2 ESA, as discussed in the following sections.

6.1.1 State the Problem

The presence of potential contamination within the underlying soil and groundwater at the site required assessment to provide information on the suitability of the end land use for the proposed redevelopment.

6.1.2 Identify the Decision

Based on the decision making process for assessing urban redevelopment sites detailed in DEC (2006) and modified to relate to the specific redevelopment requirements for this assessment, the following decisions were required to be made:

- Does the site assessment report follow the EPA 1997 Guidelines?
- Are there any unacceptable risks to likely future onsite receptors from soil or groundwater?
- Are there any issues relating to the local area background soil concentrations that exceed appropriate soil criteria?
- Have aesthetic issues at the site been addressed?
- Are there any impacts of chemical mixtures?
- Is there any evidence of, or potential for, widespread migration of contaminants from the site?
- Is a management or remediation strategy required for the site?

6.1.3 Identify Inputs to the Decision

Inputs to the decisions included:

- Site condition information and site historical information; and
- Soil and groundwater analytical data.

6.1.4 Define the Study Boundaries

The study area included the site as defined in **Section 2.1** and illustrated in **Figure 2**. The vertical extent of the investigation extended to 2 m below the depth of groundwater, or a maximum depth of 10.5 m bgs.

The timeframe for the Phase 2 ESA works was as follows:

- January 2011 SAQP and safety documents for client review;
- February 2011 Drilling (soil sampling and groundwater installation works);
- Feb/March 2011 Groundwater Monitoring Event; and
- March 2011 Production of a Phase 2 ESA report for client review.

6.1.5 Develop a Decision Rule

Soil analytical data were assessed against DECCW endorsed criteria including:

- *National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council, 1999 (NEPC 1999); and
- *Contaminated Sites: Guidelines for Assessing Service Station Sites*, NSW EPA, 1994 (EPA 1994).

The groundwater analytical data was compared against DECCW endorsed criteria, including:

- *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*, NSW DEC, March 2007 (DEC, 2007); and
- *Australian and New Zealand guidelines for fresh and marine water quality*, ANZECC/ARMCANZ. 2000 (ANZECC/ARMCANZ, 2000). (95% protection for marine water).

Details of selected criteria are provided in **Section 7**. The decision rules that were adopted to answer the decisions identified in **Section 6.1.2** are summarised in **Table 6.1**.

Table 6.1 Summary of Decision Rules

Decision Required to be Made	Decision Rule
1. Are there any unacceptable risks to onsite future receptors from soils?	Soil analytical data were compared against DECCW endorsed criteria. Statistical analyses of the data in accordance with relevant guidance documents analyses undertaken, if appropriate, to facilitate the decisions. The following statistical criteria were adopted with respect to soils: Either: the reported concentrations were all below the site criteria; Or: the average site concentration for each analyte was below the adopted site criterion; no single analyte concentration exceeded 250% of the adopted site criterion; and the standard deviation of the results was less than 50% of the site criteria. And: the 95% upper confidence limit (UCL) of the average concentration for each analyte was below the adopted site criterion[6]. If the statistical criteria stated above were satisfied, the decision was No. If the statistical criteria were not satisfied, the decision was Yes.
2. Are there any unacceptable risks to onsite future receptors from groundwater?	Groundwater analytical data were compared against DECCW endorsed criteria. Consequent of the limited extent of data where maximum levels of groundwater impact exceeded criteria, then further exposure assessment will be undertaken. Where the exposure assessment indicated a potential unacceptable risk, the decision was Yes. Otherwise, the decision was No.
3. Are there any issues relating to the local area background soil or groundwater concentrations that exceed appropriate soil criteria?	If the 95% UCL of surface soils exceeded published background concentrations (NEPC 1999), the decision was Yes. Otherwise, the decision was No.
4. Are there any chemical mixtures?	Were there more than one group of contaminants present which increase the risk of harm? If there were, the decision was Yes. Otherwise, the decision was No.
5. Are there any soil aesthetic issues?	If there were any unacceptable odour, discolouration or aesthetic issues within the media at the site, the decision was Yes. Otherwise, the decision was No.
6. Is there any evidence of, or potential for, migration of contaminants from the site?	Were contaminants present at concentrations exceeding published background concentrations (NEPC 1999) AND have the same contaminants been identified at concentrations exceeding DECCW endorsed criteria in groundwater as associated with detections of soil impact? If yes, the decision was Yes. Otherwise, the decision was No.
7. Is a site management or remediation strategy required for the site?	Was answer to any of the above decisions be Yes? If yes, a site management strategy will be required. If no, a site management strategy will not be required.

[6] *Sampling Design Guidelines.* (NSW EPA,1995)

6.1.6 Specify Limits on Decision Errors

This step is to establish the decision maker's tolerable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NSW DECCW, NEPC (1999), ANZECC/ARMCANZ (2000), DEC (2007), appropriate indicators of data quality (DQIs used to assess quality assurance / quality control) and standard JBS Environmental procedures for field sampling and handling.

AS4482.1-2005[7] nominates two types of errors that require assessment:

a) Deciding that the site is acceptable when it actually is not; and

b) Deciding that the site is unacceptable when actually it is.

It is recommended in AS4482.1 that limits of 5% probability for type a) errors and 20% probability for type b) errors be set during environmental assessments. These recommendations have been adopted for this investigation.

The following relationship is provided to determine if sufficient soil samples have been collected during the investigation to meet the above limits of decision error:

$n = 6.2\ \sigma^2 / (C_s - \mu)^2$

where: n = number of samples needed

σ = estimated standard deviation of contaminant concentration in sampling area

C_s = acceptable limit (mg/kg)

μ = estimated average concentration in sampling area (mg/kg)

When 'n'<1, sufficient samples have been collected and analysed to achieve the stated limits on decision error.

To assess the usability of the data prior to making decisions, the data were assessed against pre-determined Data Quality Indicators (DQIs). The acceptable limit on decision error is 100% compliance with DQIs.

The pre-determined Data Quality Indicators (DQIs) established for the project are discussed below in relation to precision, accuracy, representativeness, comparability and completeness (PARCC parameters), and are shown in **Table 6.2**.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples.
- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.

[7] *AS4432.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*

- **Representativeness** –expresses the degree which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods.
- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.

Table 6.2: Summary of Quality Assurance / Quality Control Program

Data Quality Indicator	Frequency	Data Quality Criteria
Precision		
Blind duplicates (soil intra laboratory)	1 / 20 samples	<50% RPD
Blind duplicates (water intra laboratory)	1 / 20 samples	<50% RPD
Split duplicates (soil inter laboratory)	1 / 20 samples	<50% RPD
Split duplicates (water inter laboratory)	1 / 20 samples	<50% RPD
Laboratory duplicates	1 / 20 samples	<50% RPD
Trip blank	1 / media	<LOR
Rinsate blank	1 / day / equipment	<LOR
Trip spike	1 / media	70-130%
Accuracy		
Surrogate spikes	All organic samples	70-130%
Matrix spikes	1 per lab batch or 20 samples	70-130%
Laboratory control samples	1 per lab batch or 20 samples	70-130%
Representativeness		
Sampling appropriate for media and analytes	-	-
Laboratory blanks	1 per lab batch	<LOR
Samples extracted and analysed within holding times.	-	14 days for principal COPC's.
Comparability		
Standard operating procedures for sample collection & handling	All Samples	All samples
Standard analytical methods used for all analyses	All Samples	All samples
Consistent field conditions, sampling staff and laboratory analysis	All Samples	All samples
Limits of reporting appropriate and consistent	All Samples	All samples
Completeness		
Soil description and COCs completed and appropriate	All Samples	All samples
Appropriate documentation	All Samples	All samples
Satisfactory frequency and result for QC samples	All QA/QC samples	-
Data from critical samples is considered valid	-	Critical samples valid

(1) If the RPD between duplicates is greater than the pre-determined data quality indicator, a judgment will be made as to whether the excess is critical in relation to the validation of the data set or unacceptable sampling error is occurring in the field.
(2) Lower recoveries may be recorded for some semi-volatile organic analysis particularly including phenols.

6.1.7 Optimise the Design for Obtaining Data

The purpose of this step is to identify a resource-effective field investigation sampling design that generates data that are expected to satisfy the site manager's decision performance criteria, as specified in the preceding steps of the DQO Process. The output of this step was the sampling design that guided the development of the field sampling and analysis plan. This step provided a general description of the activities necessary to generate and select data collection design that satisfied the decision performance criteria.

Based upon the available information from the areas of concern identified by the previous Phase 1 assessment, a targeted sampling pattern with infill targeted locations was considered most appropriate for the investigation.

Samples were collected from a total of 19 soil sampling locations across the site, as shown on **Figure 4**. Four groundwater monitoring wells were installed at targeted locations for the assessment of groundwater conditions. The sampling locations were selected to address the specific areas of concern identified during the JBS 2010 site history assessment and site inspection. Groundwater monitoring wells were installed to a maximum depth of 10.5 m or to 2 m below the encountered depth of groundwater.

6.2 Soil Sampling Methodology

Soil samples were collected via both hand tools (hand auger and shovel) and solid flight augers off a geoprobe drill rig. Samples were collected from the surface (0-0.1 m), 0.3 m, 0.5 m and every 0.5 m thereafter until natural material (or prior refusal), to identify any impacted material from previous or current site uses.

Sufficient sample material was collected to allow both field observation and laboratory analysis. Additional samples were collected from any soil horizons, which exhibited staining, odours, or other physical evidence of potential contamination.

During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indications of contamination were noted on field sheets. Collected soil samples were immediately transferred to laboratory supplied sample jars. The sample containers were transferred to an esky for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody (COC) form was completed and forwarded with the samples to the testing laboratory.

Not all soil samples collected were analysed. Samples were analysed in accordance with the analytical schedule (**Section 6.4**). All samples remained at the primary laboratory for a period of two months in case additional analysis was required following the receipt of sample results, and provided analysis of analytes was within holding times.

6.3 Groundwater Monitoring Well Installation and Sampling

Four boreholes were drilled via solid flight auger in strategic locations and were converted into groundwater monitoring wells (MW01 – MW04). The wells targeted the potential water bearing zone underlying the site. All wells were constructed using Class 18 UPVC (50mm) screen and casing.

Wells were developed by bailing and surging prior to the placement of the bentonite seal within the well annulus. Following the completion of construction, the monitoring wells were purged to minimise the disturbance to the localised groundwater and remove any water added to the aquifer during the drilling process. The volume of water purged depended on the turbidity and observations of the extracted groundwater, however extraction ceased once groundwater was observed to be clear, or a total of two well volumes had been purged.

Prior to sampling, all accessible monitoring wells were gauged by the use of an interface probe. Noting potential target COPCs include volatile constituents, groundwater monitoring wells were sampled by a low flow method. A peristaltic pump with small diameter tubing was used for the sampling. It is noted in the Murray-Darling Basin Groundwater Sampling Guidelines as referenced in NEPC (1999) that air bubbles may potentially be formed in peristaltic pump tubing which cause volatilisation of volatile

constituents. The use of small diameter tubing during the sampling prevented this from occurring.

Monitoring wells were purged at the highest possible flow-rate while ensuring that minimal fluctuations in depth to water occur. A flow cell was used to continuously monitor water quality parameters of: Electrical conductivity (EC); Redox potential (Eh); pH; Dissolved oxygen (DO); Salinity; and Temperature during purging and sampling. The groundwater sample was collected where:

- Consecutive EC readings were within 3%;
- Consecutive Eh readings were within 10mV;
- Consecutive DO readings were within 10%; and
- Consecutive pH readings were within 0.5

As per the sampling guidance provided to Vic EPA (April 2000) 'Groundwater Sampling Guidelines Publication 669'.

6.4 Laboratory Analyses

Soil and groundwater samples were submitted for laboratory analysis. The primary laboratory contracted was Envirolab Services Australia (Envirolab), with the secondary laboratories being Pickford and Rhyder (asbestos duplicates) and SGS Australia Pty Ltd (SGS). All laboratories are NATA accredited for the required analysis. In addition, the laboratories were required to meet the internal QA/QC requirements of JBS. Laboratory analyses of samples was conducted in accordance with **Table 6.3**.

Table 6.3: Summary of Design for Obtaining Data

Area of Environmental Concern (AEC)	Sampling Locations	Laboratory Analyses (incl QA.QC)
Soil	BH1 - BH19	Heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni, Zn) – 22 samples TPH/BTEX – 14 samples PAHs – 14 samples OCP/OPP/PCBs – 6 samples Asbestos – 22 samples
Groundwater	MW1-MW4	Metals – 6 samples TPH/BTEX – 6 samples PAHs – 6 samples OCP/OPP/PCBs – 6 samples

7 Guidelines and Assessment Criteria

7.1 Regulatory Guidelines

The investigation was undertaken with consideration to aspects of the following guidelines, as relevant:

- *Contaminated Sites: Guidelines for Assessing Service Station Sites,* NSW EPA, 1994 (EPA 1994);
- *Contaminated Sites: Sampling Design Guidelines,* NSW EPA, 1995 (EPA 1995);
- *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*, NSW EPA, 1997 (EPA 1997);
- *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme, 2nd Edition*, NSW EPA, 2006 (DEC 2006);
- *National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council, 1999 (NEPC 1999);
- *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites,* Australian and New Zealand Environment and Conservation Council and the National Health and Medical Research Council, 1992 (ANZECC/NHMRC 1992);
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Paper No 4, 2000 (ANZECC/ARMCANZ 2000);
- *Australian Drinking Water Guidelines,* National Health and Medical Research Council and Agriculture and Resource Management Council of Australia and New Zealand, 2004 (NHMRC/NRMMC 2004); and
- *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination,* NSW DEC, March 2007 (DEC 2007).

7.2 Soil Criteria

Based on the site zoning and existing and proposed end land use, and in accordance with the decision process for assessment of urban redevelopment sites (DEC 2006), concentrations of contaminants in the soil were compared against investigation levels for residential with gardens and accessible soil (NEHF-A) (**Table 7.1**). As a requirement of DEC 2006, Provisional phytotoxicity based investigation levels (PBILs) also need to be addressed, and are provided in **Table 7.1.** However, due to the landscaping requirements of the proposed development, *in situ* soils are not expected to be used as growing media. Further, it is noted that the phytotoxicity-based criteria are provisional in nature only, and have "*significant limitations because phytotoxicity depends on soil and species parameters in ways that are not fully understood*" (DEC 2006). PBILs are considered not applicable to this investigation and are provided here as a reference only.

Table 7.1 Soil Criteria (all units in mg/kg)

Constituents	Limit of Reporting (mg/kg)	Health-Based Investigation Level (residential with accessible soils) (NEHF – A)[1]	Phytotoxicity-Based Investigation Level (PBILs)[3]
Heavy Metals			
Arsenic	4.0	100	20
Cadmium	1.0	20	3

Chromium (VI)	1.0	100	1
Copper	1.0	1000	100
Nickel	1.0	600	60
Lead	1.0	300	600
Zinc	1.0	7000	200
Mercury (inorganic)	0.1	15	1
Total Petroleum Hydrocarbons (TPH)			
C_6 – C_9 Fraction	25	65[2]	-
C_{10} – C_{36} Fraction	250	1000[2]	-
BTEX			
Benzene	1.0	1[2]	-
Toluene	1.0	130[2]	-
Ethylbenzene	1.0	50[2]	-
Total Xylenes	3.0	25[2]	-
Polycyclic Aromatic Hydrocarbons (PAH)			
Benzo(a)pyrene	0.05	1	-
Total PAHs	1.55	20	-
Pesticides (OCP/OPP)			
Aldrin + Dieldrin	0.2	10	-
Chlordane	0.1	50	-
DDT + DDD + DDE	0.3	200	-
Heptachlor	0.1	10	-
Polychlorinated Biphenyls (PCBs)			
PCBs (total)	0.9	10	-
OTHER			
Asbestos	Presence	No fragments of ACM and No fibres observed using NATA accredited analysis	-

[1] Column 1 (NEHF - A), Health-based Investigation Levels (DEC 2006)
[2] Table 3 (EPA 1994)
[3] Column 5 (PBIL), Phytotoxicity-based Investigation Levels (DEC 2006)

7.3 Groundwater Criteria

The limit on decision error for groundwater is sufficient data to characterise the upgradient and downgradient groundwater quality.

In accordance with the DEC 2007, groundwater data collected during the preliminary groundwater assessment were compared against existing generic groundwater investigation levels (GILs), which protect the following environmental values:

- Drinking water (NHMRC/NRMMC 2004); and
- Aquatic ecosystems (ANZECC/ARMCANZ 2000).

Adopted water quality criteria – taken from ANZECC/ARMCANZ 2000, and NHMRC/NRMMC 2004 – have been summarised in **Table 7.2**. The adopted water quality criteria (WQC) are in compliance with the GILs for 95% protection for the protection of aquatic ecosystems. There are two exceptions to this general rule:

1. In the case where the laboratory LOR is less than the most sensitive criterion for an individual contaminant of concern, then the LOR has been used as the adopted WQC.
2. In the case where the adopted WQC is lower than natural background level of an individual contaminant of concern, then the natural background level has been used as the adopted WQC.

It is noted, as with soil guidelines, criteria are not readily available for all COPCs. Where detections of these constituents occur, international literature was reviewed to determine appropriate criteria.

Table 7.2 –Adopted Water Quality Criteria (WQC) (all units in µg/L unless noted)

Constituents	Limit of Reporting	Laboratory Method	Aquatic Ecosystem Criteria[1]	Drinking Water Guidelines[2]
Metals				
Arsenic (V)	1	ICP-MS (USEPA200.8)	24	7
Cadmium	0.1	ICP-MS (USEPA200.8)	0.2	2
Chromium (III)	1	ICP-MS (USEPA200.8)	3.3	50
Copper	1	ICP-MS (USEPA200.8)	1.4	2000
Lead	1	ICP-MS (USEPA200.8)	3.4	10
Mercury	0.1	ICP-MS (USEPA200.8)	0.06	1
Nickel	1	ICP-MS (USEPA200.8)	11	20
Zinc	1	ICP-MS (USEPA200.8)	8	-
TPH/BTEX				
TPH C_{10}-C_{36}	260	GCFID (USEPA8000)	600[3]	-
TPH C_6-C_9	10	GCFID (USEPA8000)	-	-
Benzene	1	Purge/trap (USEPA8020A)	950	1
Toluene	1	Purge/trap (USEPA8020A)	180	800
Ethylbenzene	1	Purge/trap (USEPA8020A)	80	300
Xylenes	3	Purge/trap (USEPA8020A)	625	600
PAHs				
Naphthalene	1	GCMS(USEPA8270)	16	-
Phenanthrene	1	GCMS(USEPA8270)	2	-
Anthracene	1	GCMS(USEPA8270)	0.4	-
Fluoranthene	1	GCMS(USEPA8270)	1.4	-
Benzo(a)pyrene	1	GCMS(USEPA8270)	0.2	-

[1] (ANZECC (2000) Trigger values for the protection of 95% of aquatic ecosystems Fresh Water)
[2] NHMRC/NRMMC (2004) Drinking Water Guidelines
[3] Insufficient data to derive a reliable trigger value. In these instances, reference has been made to low reliability trigger levels contained in ANZECC/ARMCANZ (2000).

8 Quality Assurance / Quality Control

8.1 QA/QC Results

The QA/QC results for soil are summarised in **Table 8.1** and discussed in **Section 8.2** below. Detailed QA/QC results are included the laboratory reports in **Appendix D**.

Table 8.1 - Soil QA/QC Results Summary

Data Quality Objective	Frequency (Soil)	Results	DQI met?
Precision			
Soil Blind duplicates (intra-laboratory)	1/20 – 5%	RPD – 0 to 40%	Yes
Soil Split duplicates (inter-laboratory)	1/20 – 5%	RPD – 0 to 120%	Partial[1]
GW Blind duplicates (intra-laboratory)	1/4 – 25%	RPD – 0%	Yes
GW Split duplicates (inter-laboratory)	1/4 – 25%	RPD – 0 to 23%	Partial[1]
Laboratory Duplicates	5/24 – 21%	RPD – 0 to 114 %	Partial[1]
Accuracy			
Laboratory control samples	10/24 – 42%	85 - 130%	Yes
Matrix spikes	4/24 – 17%	71 – 139% recovery	Partial[1]
Surrogate spikes	All organic analyses	75 – 109% recovery	Yes
Soil Trip spike	1/1 batch	96 – 112% recovery	Yes
Soil Trip blank	1/1 batch	<LOR	Yes
Soil Rinsate blank	1/1 batch	<LOR	Yes
GW Trip spike	1/1 batch	74 – 82% recovery	Yes
GW Trip blank	1/1 batch	<LOR	Yes
GW Rinsate blank	1/1 batch	<LOR	Yes
Representativeness			
Sampling appropriate for media and analytes	All samples	All sampling conducted according to JBS protocol, and appropriate for media and COPCs	Yes
Samples extracted and analysed within holding times.	All samples	All samples extracted and analysed within holding times	Yes
Comparability			
Standard operating procedures used for sample collection and handling	All samples	Standard procedures for all sampling	Yes
Standard analytical methods used	All samples	Standard analytical methods	Yes
Consistent field conditions, sampling staff and laboratory analysis	All samples	Consistent field staff and consistent laboratory used	Yes
Limits of reporting appropriate and consistent	All samples	LORs appropriate and generally consistent	Yes
Completeness			
Soil descriptions and CoCs completed and appropriate	All samples	CoCs and field documentation complete.	Yes
Appropriate documentation	All samples	Documentation complete	Yes
Satisfactory frequency and result for QC samples	All samples	Frequency adequate	Yes
Data from critical samples is considered valid	All samples	Valid	Yes
Analytical methods and limits of reporting appropriate for media and adopted site assessment criteria.	All samples	LOR is less than adopted investigation criteria	Yes

[1] See discussion of DQI exceedances below.

8.2 QA/QC Discussion

8.2.1 Precision

Laboratory Duplicates

The rate of laboratory duplicate sampling and analysis exceeded the DQI's (5%). All laboratory duplicates undertaken as part of the assessment were found to have acceptable RPDs with the exception of duplicate sample 52147-1, which returned PAH concentrations with corresponding RPDs ranging from 0 – 114 %.

The RPD exceedance is considered to be a result of the heterogeneous nature of the fill materials, and is not expected to change the accuracy of the data set.

8.2.1.1 Soil

Blind Duplicates

The rates of blind duplicate sampling and analysis exceeded the DQI's for soil sampling (5%). RPDs have been found to be acceptable for all duplicate sample locations.

Split Duplicates

The rates of split duplicate sampling and analysis exceeded the DQI's for soil sampling (5%). RPDs have been found to be acceptable for soil duplicate samples with the exception of mercury and chrysene in QC1 and corresponding primary sample HA15 (0-0.1 m) which had RPDs of 120 % and 55%, respectively.

It should be noted that even though the RPDs exceeded the DQO's, the concentrations of both analytes were reported below the adopted site criteria. Furthermore, the RPDs are assumed to be a result of the heterogeneous nature of the fill materials on site and do not pose an issue for the accuracy of data attained during this investigation.

8.2.1.2 Groundwater

Blind Duplicates

The rates of blind duplicate sampling and analysis exceeded the DQI's for groundwater sampling (5%). RPDs have been found to be acceptable for all duplicate sample locations.

Split Duplicates

The rates of split duplicate sampling and analysis exceeded the DQI's for groundwater sampling (5%). RPDs have been found to be acceptable for all duplicate sample locations.

8.2.2 Accuracy

Surrogate Spikes

Surrogate spike results have been reported for analysis of all constituents. The surrogate spike sample recoveries were reported within the acceptable range of 70–130%.

Matrix Spikes

Matrix spike results have been reported for analysis of all constituents. The matrix spike recoveries were generally reported within the acceptable range of 70–130% with a few exceptions. The over recoveries of two OCP spikes are over the JBS adopted range, however, are still within the NATA accredited laboratory limits and therefore considered acceptable.

Laboratory Control Samples

Laboratory control sample results have been reported for analysis of all constituents. The laboratory control sample recoveries were reported within the acceptable range of 70–130%.

Soil Trip spike

Trip spikes were prepared and submitted for analysis with the soil samples. The trip spike recoveries were within the range of 70-130%.

Soil Trip blank

Trip blanks were prepared and submitted for analysis with the soil samples. All trip blank results were found to be acceptable.

GW Trip spike

Trip spikes were prepared and submitted for analysis with the groundwater samples. The trip spike recoveries were within the range of 70-130%.

GW Trip blank

Trip blanks were prepared and submitted for analysis with the groundwater samples. All trip blank results were found to be acceptable.

8.2.3 Representativeness

Sampling appropriate for media and analytes

Sampling was undertaken by recovery of soil and groundwater samples appropriate for the media, depths and COPCs. The designated sampling methods were considered appropriate for the collection of both soil and groundwater samples for the Phase 2 ESA at Hurstville.

Holding times

All analyses have been undertaken within holding times.

8.2.4 Comparability

The laboratories were NATA accredited for all methods. SGS asbestos analysis does not adhere to the same analytical methodologies and Australian Standards as the primary laboratory. Pickford and Rhyder adhere to the same Australian Standard and laboratory limit of reporting and were utilised as the secondary laboratory for asbestos analysis.

Experienced JBS personnel undertook all sampling in accordance with standard JBS sampling methods.

Limit of Reporting

The limits of reporting were appropriate to the analytes identified as COPCs.

8.2.5 Completeness

Documentation

All documentation is complete and correct. Chain of custody documentation is provided with laboratory report sheets in **Appendix E**.

Frequency for QC Samples

The frequency of analysis of all QC samples is considered appropriate.

Laboratory Method

All laboratory methods were appropriate to the analysis being undertaken and the objectives of the assessment.

8.3 Assessment of Decision Error

A review of the results presented in **Section 8.2**, indicates that overall the results of the field and laboratory QA/QC program indicate that the data obtained from this investigation generally met the predetermined Data Quality Indicators (DQIs) or, where the DQIs were exceeded, did not indicate systematic sampling or analytical errors. As

such, the data are considered to be of adequate quality to be relied on for the purposes of assessing the environmental condition at the site.

9 Field and Analytical Results

9.1 Soil Field Observations

Observations made during field works are summarised below, sample locations are provided in **Figure 4**, soil field documentation is provided in **Appendix A**, and borelogs are provided in **Appendix B**.

Soil at the site was observed to comprise fill material, natural soils and underlying bedrock. The fill material was observed to depths ranging from 0.4 to 2.1 m bgs, and was observed as potentially re-worked natural material, consisting of orange, brown and grey silty clays, medium to high plasticity with inclusions of terracotta, organics, plastic, wood, concrete, metal, and glass.

The underlying natural soils were observed to consist of orange, brown and grey mottled medium to high plasticity clays and extended to a depth range of 0.5 to 1.6 m bgs.

The underlying bedrock comprises shales and sandstone and was observed at depths of 0.5 to 2.1 m bgs across the site.

Two fragments of suspected ACM were identified at sample locations BH03/MW03 and HA12.

There were no other visual or olfactory indications of contamination identified during the field works.

9.2 Soil Analytical Results

The soil sampling locations are shown on **Figure 4** and exceedances are provided on **Figure 5**. A sample register is provided as **Table A**, and summarised laboratory results in **Tables B** to **D**. Detailed laboratory reports and chain of custody documentation is provided in **Appendix E**.

The laboratory results are summarised in the following sections.

9.2.1 Heavy Metals

Concentrations of heavy metals in the samples analysed were less than the adopted criteria for the most sensitive land use with two exceptions. HA09 (0-0.1 m) and HA11 (0.8-0.9 m) exceeded the criterion of 300 mg/kg for lead, with concentrations of 430 and 480 mg/kg, respectively.

It should be noted that a deeper sample collected at HA09 (0.3-0.4 m) was submitted for analysis and returned a concentration for lead below the adopted criterion. Additionally, shallower samples from HA11 returned concentrations of lead below the adopted criterion.

Additionally, 95 % UCL statistical analysis was undertaken for lead concentrations across the site. The resulting UCL of 150 mg/kg was below the site criteria of 300 mg/kg. UCL statistical information is provided in **Appendix C**.

Based on this, heavy metals are considered not to pose a contamination issue on the site.

9.2.2 TPH and BTEX

Concentrations of BTEX were not reported above the laboratory limit of reporting (LOR) for any sample analysed. On this basis, BTEX compounds do not pose a contamination issue at the site and background concentrations do not need to be considered.

Concentration of TPH compounds were not reported above the site adopted criteria for any sample analysed. All samples analysed, with the exception of BH02/MW02 (0-0.1 m)

reported TPH concentrations below the LOR. On this basis, TPH compounds do not pose a contamination issue at the site.

9.2.3 PAHs

Concentrations of PAHs were reported below the site criteria for all samples analysed, with one exception. HA15 (0-0.1 m) reported a Benzo(a)pyrene concentration of 2.3 mg/kg, above the site criteria (1 mg/kg), and a total PAH concentration of 27.6 mg/kg, above the site criteria (20 mg/kg). Additional analysis was undertaken on a deeper sample collected at HA15 (0.3-0.4 m) and both B(a)P and total PAHs were below the site criteria.

95 % UCL statistical analysis was undertaken for both B(a)P and total PAH concentrations across the site. The resulting UCLs of 0.8 mg/kg and 10.2 mg/kg were below the site criteria of 1 mg/kg and 20 mg/kg for B(a)P and total PAHs, respectively. UCL statistical information is provided in **Appendix C**.

On this basis, PAH compounds do not pose a contamination issues at the site.

9.2.4 OCP, OPPs and PCBs

Concentrations of OCP, OPP and PCBs were not reported above the LOR in any sample analysed. On this basis, OCP, OPP and PCB compounds do not pose a contamination issue at the site.

9.2.5 Asbestos

Chrysotile and amosite asbestos were confirmed as present in ACM fragment sample F1 which was collected on the ground surface at BH03/MW03. Fragment F2 was confirmed to not contain ACM.

Asbestos fibres were not identified in any soil sample analysed, either from samples collected directly beneath the fragments, or from surface samples across the general site area.

Based on this, bonded asbestos within ACM poses a potential contamination issue at the site.

9.3 Groundwater Field Observations

9.3.1 Meteorology

The groundwater gauging and sampling was undertaken on the 4th March 2011. Observed meteorological readings prior and during the GME are summarised following in **Table 9.1**.

Table 9.1: Summary of Recent Meteorological Observations at Sydney Airport

Date	Maximum temperature (°C)	Minimum Temperature (°C)	Rainfall (mm)	Evaporation (mm)	Sun (hours)
18/02/2011	26.1	22.3	0	5.0	3.8
19/02/2011	32.5	22.4	0	4.4	7.8
20/02/2011	32.1	24.5	0	7.2	9.5
21/02/2011	25.1	19.6	0.2	8.2	4.3
22/02/2011	20.6	19.4	0	9.0	3.2
23/02/2011	23.5	16.9	0.4	4.2	7.3
24/02/2011	27.7	16.9	0	5.0	12.0
25/02/2011	29.5	18.5	0	7.4	7.6
26/02/2011	29.6	21.1	0	7.6	11.1
27/02/2011	32.2	21.1	0	8.0	1.4

Date	Maximum temperature (°C)	Minimum Temperature (°C)	Rainfall (mm)	Evaporation (mm)	Sun (hours)
28/02/2011	29.0	22.1	0.4	5.0	2.4
1/03/2011	34.4	22.2	0.4	4.4	1.9
2/03/2011	22.9	18.6	0.2	9.2	0.0
3/03/2011	31.7	17.6	0	2.2	10.5
4/03/2011	28.1	19.1	0	8.0	9.4
5/03/2011	21.9	17.8	0.6	8.2	0.6
6/03/2011	22.4	18.1	0.2	8.2	2.9

From review of **Table 9.1**, rainfall in the 14 days leading up to the GME consisted of a total of 1.6 mm. Due to the minimal amount of rainfall within the 14 days prior, and the mean temperature and evaporation during this period, rainfall is not believed to have had a significant impact on groundwater quality during this sampling round.

9.3.2 Field Observations and Water Quality Parameters

Water quality parameters, consisting of electrical conductivity, total dissolved solids, pH, temperature and dissolved oxygen have been collected during groundwater sampling. The parameters are discussed in the following sections:

9.3.2.1 Salinity (Electrical Conductivity)

The salinity levels on the site were reported between 0.8 and 3.5 mS/cm, which is typical of low to moderate saline water. The wells located within the northern portion of the site, MW01 (north western) and MW02 (north eastern) were reported as low saline water. The wells located within the southern portion of the site MW03 (south eastern) and MW04 (south western) were reported to contain moderate saline water.

9.3.2.2 Turbidity (TDS)

The turbidity or 'muddiness' of water is caused by the presence of suspended particulate and colloidal matter consisting of suspending clay, silt, and detritus. The turbidity of the groundwater on site ranged from 400 to 2000 ppm, with the highest turbidity water being recorded at MW03 and MW04 on the southern portion of the site.

9.3.2.3 Dissolved Oxygen

The dissolved oxygen (DO) concentrations measured in a waterbody reflects the equilibrium between oxygen-consuming processes (*e.g.* respiration) and oxygen-releasing processes (*e.g*. photosynthesis). Furthermore, measurement of DO defines the living conditions for aerobic (oxygen requiring) organisms.

The recommended level of dissolved oxygen for freshwater and marine species water quality (ANNZECC 2000) is > 6 mg/L. Low levels of dissolved oxygen have been identified in all monitoring wells, with a range between 0.5 mg/L and 2.39 mg/L.

9.3.2.4 pH

Groundwater at the site in all four monitoring wells falls within the slightly acidic bracket with recorded pH of 4.9 to 5.8, outside the 'normal' pH range of 6.5 to 8.5. However, ANZECC 2000 does state that review of pH on biota indicate no acutely lethal effect of fish in the pH range of 5 to 9.

9.3.2.5 Temperature

Groundwater temperature recorded during the 2011 GME reported temperatures ranging between 20.9°C and 24.4°C.

9.4 Groundwater Analytical Results

Groundwater monitoring locations are shown on **Figure 4**. A sample register is provided in **Tables E** and **F**, field forms are provided in **Appendix D** and laboratory results are presented in **Tables G** to **I**. Detailed laboratory reports and chain of custody documentation is provided in **Appendix E**.

The laboratory results are summarised in the following sections.

9.4.1 Heavy Metals

Heavy metals reported above the WQC included:

- A concentration of arsenic was reported above the Drinking water WQC (7 µg/L), with a concentration of 14 µg/L reported in MW04;
- Concentrations of copper were reported above the ANZECC 2000 95% protection WQC (1.4 µg/L) with concentrations of 5, 3 and 10 µg/L, respectively, in MW01, MW02 and MW03. However, all reported concentrations were below the drinking water criteria;
- Concentrations of nickel were reported above the ANZECC 2000 95% protection WQC (11 µg/L) with concentrations of 20 and 29 µg/L, respectively, reported in MW01 and MW04; and
- Concentrations of zinc were reported above the ANZECC 2000 95% protection WQC (8 µg/L) with concentrations of 72, 9, 48 and 58 µg/L, respectively, reported in MW01, MW02, MW03 and MW04.

All other analytes and locations were reported below the WQC. Due to the low concentrations of heavy metals observed, the lack of heavy metals within the soil profile and the presence of heavy metal concentrations in both the up and downgradient boundaries, the heavy metal exceedances are considered to be a result of offsite impact (such as stormwater or offsite runoff) rather than impact caused by on site activities.

Additionally, due to the fluctuation in concentrations of heavy metals, it is considered that background levels are not responsible for the exceedances.

Based on this, heavy metals do not pose a contamination issue at the site.

9.4.2 TPH and BTEX

Concentrations of TPH C_6-C_9, TPH C_{10}-C_{36} and BTEX were not reported above the WQC in any sample analysed. On this basis, TPH and BTEX compounds do not pose a contamination issue at the site and background concentrations do not need to be considered.

9.4.3 PAHs

Concentrations of PAHs were not reported above the WQC in any sample analysed. Based on this, PAH compounds do not pose a contamination issue at the site, and localised background concentrations do not need to be considered.

9.4.4 OCP, OPPs and PCBs

Concentrations of OCPs, OPPs and PCBs were not reported above the LOR in any sample analysed. On this basis, OCP, OPP and PCB compounds do not pose a contamination issue at the site, and localised background concentrations do not need to be considered.

10 Site Characterisation

Based on the decision making process for assessing urban redevelopment sites detailed in DEC (2006) and discussed in **Section 6.1.2**, the decisions requiring to be made are discussed below.

10.1 Reporting in accordance with EPA requirements

The report has been prepared with consideration of the requirements of, EPA 1997.

10.2 Unacceptable risks to onsite future receptors from soils

Three soil locations were identified to contain localised areas of impact. Two contained lead impact (MW09 and MW11), and one contained PAH impact (MW15). Additionally, one fragment of ACM was observed on the surface of the site. Given the low concentrations of the exceeding analytes, their localised impact which can be remediated through the earthworks phase of the development, and their respective UCL 95% statistics below the site criteria, no unacceptable risks to onsite future receptors from soils were identified. Notwithstanding that, it should be noted that areas of the site, mainly under existing buildings, could not be accessed during the present investigation. Investigation of these areas should be carried out given that the hospital building has developed over time encompassing and covering areas that have the potential to have been contaminated by hospital activities in the past.

10.3 Unacceptable risks to onsite future receptors from groundwater

Following the GME on the site, no unacceptable risks to onsite future receptors from groundwater have been identified.

10.4 Local background concentrations

During the Phase 2 ESA, soil and groundwater results indicated the chemical concentrations reported for sample locations within the site were either below the LOR and / or the site adopted criteria (with three localised soil exceptions). As such, there were no identified localised background soil or groundwater concentrations that needed to be considered as part of this investigation.

10.5 Aesthetic issues

Two fragments of suspected ACM were observed and collected for analysis. One fragment was identified as containing asbestos.

During the current investigation consideration was given to odours and soil discolouration during the site assessment process, as recorded in the site condition and field observation information provided within the report and detailed descriptions provided in the field notes. As such, aesthetic issues are considered to have been addressed.

10.6 Chemical Mixtures

Chemical mixtures were not identified in relation to the contaminants of concern assessed within each of the site sample locations.

10.7 Potential Migration of Contaminants

Based on the analytical results, the unidentified source of the localised contamination, as well as the geology of the site, the potential for migration of contaminants at the site is considered to be low.

10.8 Site Management Strategy

Based on the current investigation and subject to infill sampling being undertaken in the building footprints following demolition, the site is considered suitable for the proposed residential with accessible soils land use.

11 Conclusions and Recommendations

11.1 Conclusions

Based on the findings of this investigation and subject to the limitations in **Section 12**, conclusions are as follows:

- There were no unacceptable risks to onsite future receptors from soils sampled on the site;
- There were no unacceptable risks to onsite future receptors from groundwater sampled at the site;
- There were no odorous or stained soils observed on the site, and all aesthetic issues have been addressed as part of this ESA;
- Based on the analysis of the soil and groundwater on the site, there are no background contaminant levels that require consideration as part of the ESA Phase 2 assessment;
- There are no unacceptable human health risks posed by potential chemical mixtures identified on the site;
- There is no evidence of, or potential for, migration of contaminants from the site; and
- At this stage remediation is not required. However, further investigation of the footprints of the buildings following demolition is recommended so that full coverage of the site in accordance with DECCW guidelines can be achieved.

11.2 Recommendations

Based on the results of the Phase 2 ESA, and subject to the limitations in **Section 12**, the following remediation works are recommended:

- Due to the working nature of the hospital, sample locations were placed around the perimeter of the building to minimise interference. Additional soil sample locations should be undertaken underneath the footprint of the building following demolition works to ensure no additional contamination is present; and
- Prior to demolition of the buildings, a hazardous material survey should be undertaken to identify any buildings which may contain hazardous material (such as ACM or lead paint).

12 Limitations

This report has been prepared for use by the client who commissioned the works in accordance with the project brief only and has been based in part on information obtained from other parties. The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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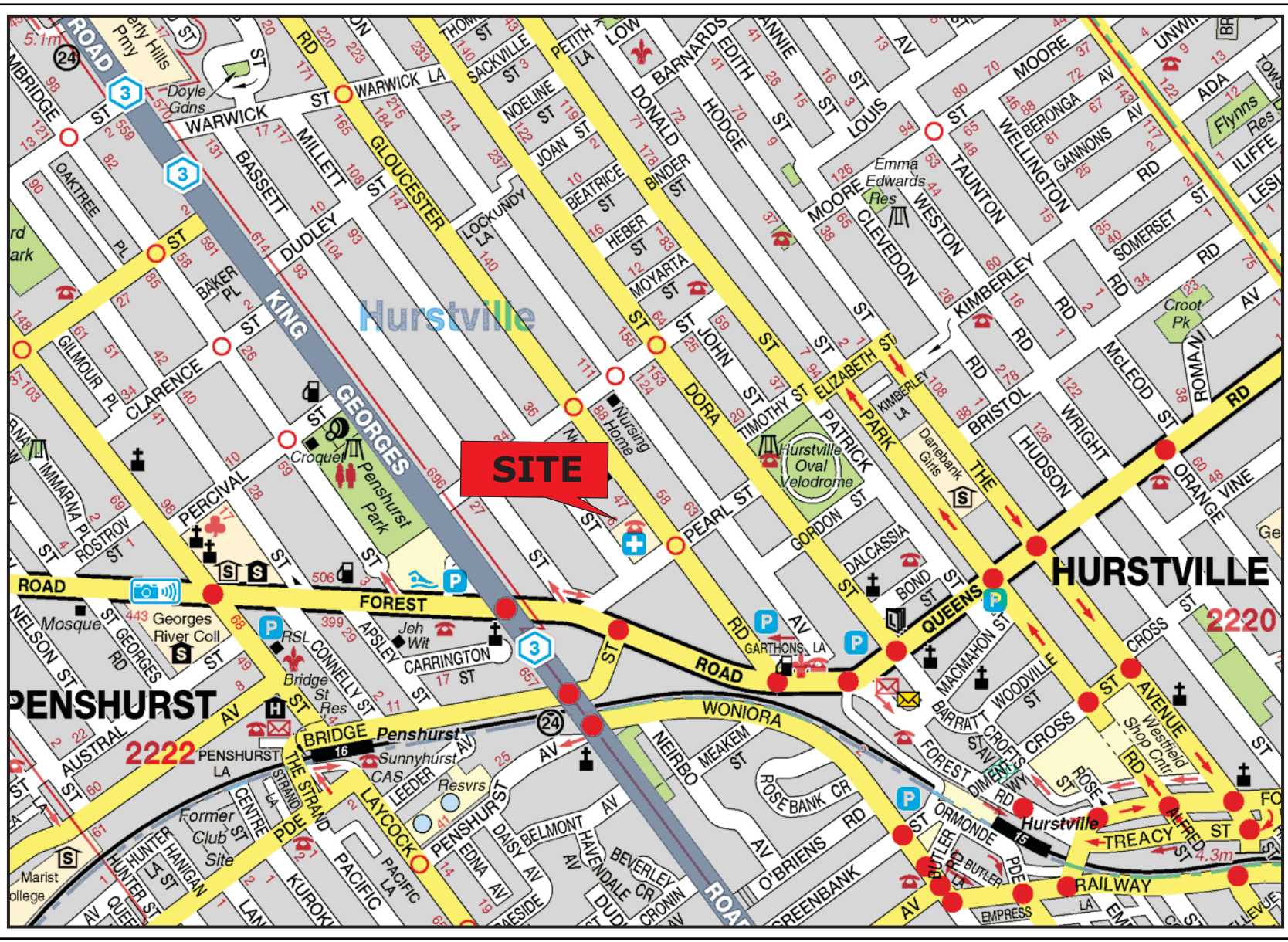
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements and site history, not on sampling and analysis of all media at all locations for all potential contaminants.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS Environmental Pty Ltd reserves the right to review the report in the context of the additional information.

Figures



Source: Base Image -© Universal Publishers 2008

0 125 250 500 m

Scale: Approximate

Datum: MGA94 Zone 56		Doc. No. 41486_16764	
A4			
R02	Original Issue	RF	16-03-2011
Rev	Description	Drn.	Date

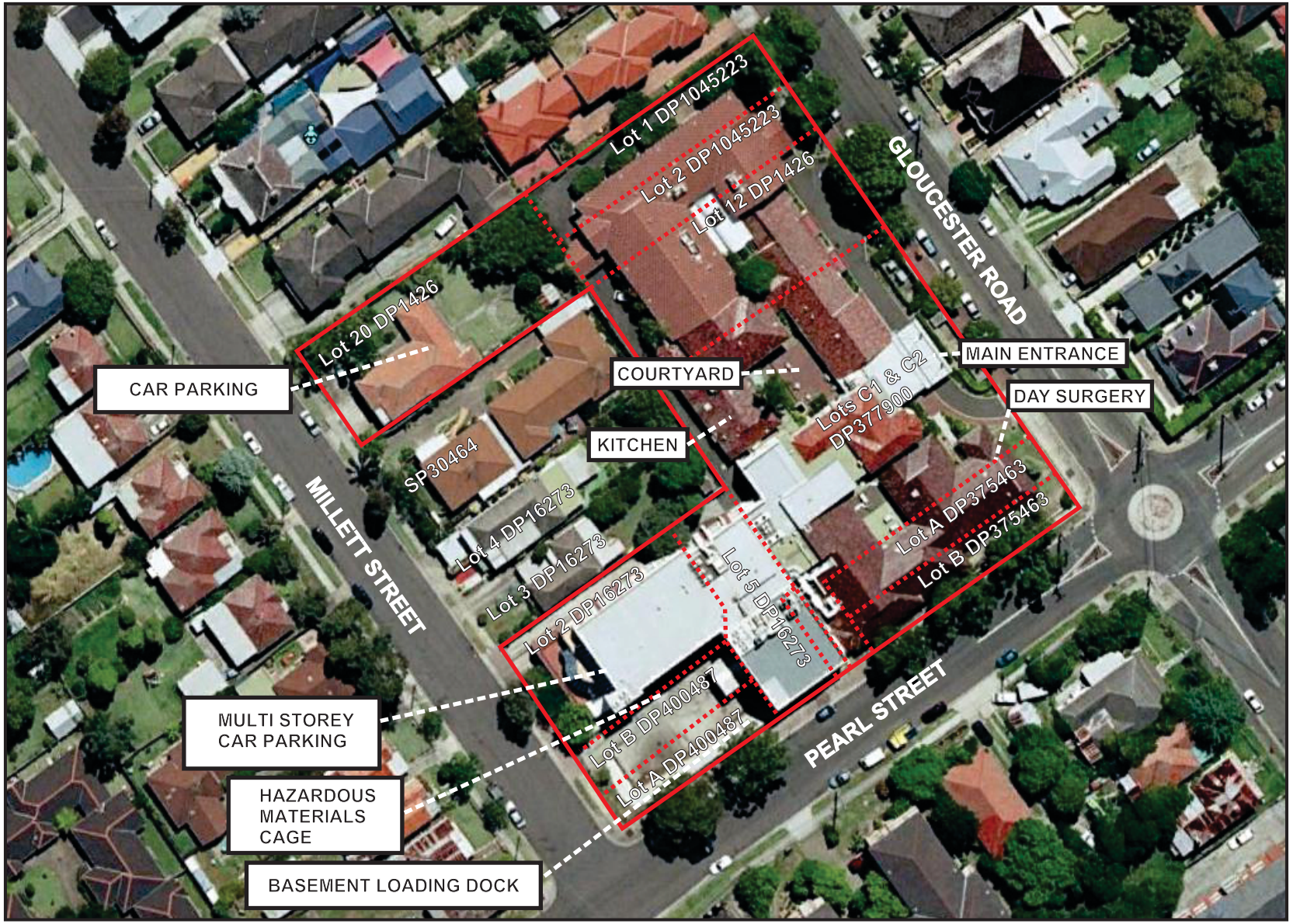
JBS ENVIRONMENTAL

Figure 1: Site Location

Client: Continuum Healthcare Group

Project: Gloucester Road, Hurstville, NSW

Job No: 41486 File Name: 41486_01.cdr



Source: Base Image - Google 2011

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Scale: Approximate

Datum: MGA94 Zone 56		Doc. No. 41486_16764	
A4			
R02	Original Issue	RF	16-03-2011
Rev	Description	Drn.	Date

Legend:

- Hospital Feature
- Site Boundary
- Lot Boundaries

JBS ENVIRONMENTAL

Figure 2: Detailed Site Layout

Client: Continuum Healthcare Group

Project: Gloucester Road, Hurstville, NSW

Job No: 41486 File Name: 41486_02.cdr

Source: Base Image - Google 2011

0 10 20 40 m

Scale: Approximate

Datum: MGA94 Zone 56		Doc. No. 41486_16764	
A4			
R02	Original Issue	RF	16-03-2011
Rev	Description	Drn.	Date

Legend:

- Hospital Feature
- Site Boundary
- Lot Boundaries
- Areas of Environmental Concern

JBS ENVIRONMENTAL

Figure 3: Identified Areas of Environmental Concern

Client: Continuum Healthcare Group

Project: Gloucester Road, Hurstville, NSW

Job No: 41486 File Name: 41486_03.cdr

Source: Base Image - Google 2011

0 10 20 40 m

Scale: Approximate

Datum: MGA94 Zone 56		Doc. No. 41486_16764	
A4			
R02	Original Issue	RF	16-03-2011
Rev	Description	Drn.	Date

Legend:

- Hand Auger
- Borehole
- Borehole/Groundwater Monitoring Well
- Site Boundary
- Lot Boundaries

JBS ENVIRONMENTAL

Figure 4: Soil and Groundwater Sample Locations

Client: Continuum Healthcare Group

Project: Gloucester Road, Hurstville, NSW

Job No: 41486 File Name: 41486_04.cdr

Source: Base Image - Google 2011

0 10 20 40 m
Scale: Approximate

Datum: MGA94 Zone 56		Doc. No. 41486_16764	
A4			
R02	Original Issue	RF	16-03-2011
Rev	Description	Drn.	Date

Legend:
- Hand Auger
- Borehole
- Borehole/Groundwater Monitoring Well
- Site Boundary
- Lot Boundaries

JBS ENVIRONMENTAL

Figure 5: Soil Exceedances

Client: Continuum Healthcare Group

Project: Gloucester Road, Hurstville, NSW

Job No: 41486 File Name: 41486_05.cdr

Tables

Project Number: 41486
Hurstville Private Hospital
Table A Soil Sample Register

Location	Sample ID	Date	Sample Depth	Analytes	Report #
BH01/MW01	BH01/MW01	22/02/2011	0.2-0.4	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52147
	BH01/MW01	22/02/2011	0.8-1.0	Asbestos Identification	52147
	BH01/MW01	22/02/2011	2.5-2.7	-	52147
	BH01/MW01	22/02/2011	4.5-4.7	-	52147
	BH01/MW01	22/02/2011	7.5-7.8	-	52147
	BH01/MW01	22/02/2011	9.0-9.3	-	52147
BH01/MW02	BH02/MW02	22/02/2011	0.0-0.1	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52147
	BH02/MW02	22/02/2011	0.3-0.5	Metals, Asbestos	52147
	BH02/MW02	22/02/2011	0.5-0.7	-	52147
	BH02/MW02	22/02/2011	1.0-1.2	-	52147
	BH02/MW02	22/02/2011	2.0-3.5	-	52147
	BH02/MW02	22/02/2011	9.8-10.0	-	52147
BH01/MW03	BH03/MW03	22/02/2011	0.0-0.1	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52147
	BH03/MW03	22/02/2011	0.3-0.5	-	52147
	BH03/MW03	22/02/2011	0.5-0.7	-	52147
	BH03/MW03	22/02/2011	1.0-1.2	-	52147
	BH03/MW03	22/02/2011	9.5-10.0	-	52147
	BH03/MW03	22/02/2011	2.5-2.7	-	52147
BH01/MW04	BH04/MW04	22/02/2011	0.2-0.3	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52147
	BH04/MW04	22/02/2011	0.5-0.7	Metals, Asbestos	52147
	BH04/MW04	22/02/2011	2.2-2.4	-	52147
	BH04/MW04	22/02/2011	3.9-4.5	-	52147
	BH04/MW04	22/02/2011	7.2-7.5	-	52147
	BH04/MW04	22/02/2011	9.8-10.0	-	52147
BH05	BH05	22/02/2011	0.15-0.25	Metals, TPH, PAH, Asbestos	52147
	BH05	22/02/2011	0.5-0.7	-	52147
	BH05	22/02/2011	0.25-0.5	-	52147
HA06	HA06	22/02/2011	0.0-0.1	-	52147
	HA06	22/02/0211	0.3-0.4	-	52147
	HA06	22/02/2011	0.6-0.7	-	52147
HA07	HA07	22/02/2011	0.0-0.1	Metals, TPH, PAH, BTEX	52147
	HA07	22/02/2011	0.2-0.3	-	52147
	HA07	22/02/2011	0.5-0.6	-	52147
	HA07	22/02/2011	0.8-0.9	-	52147
HA08	HA08	22/02/2011	0.0-0.1	Metals, TPH, PAH, BTEX	52147
	HA08	22/02/2011	0.3-0.4	Metals, Asbestos	52147
	HA08	22/02/2011	0.5-0.6	-	52147
	HA08	22/02/2011	1.0-1.1	-	52147
HA09	HA09	22/02/2011	0.0-0.1	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52147
	HA09	22/02/2011	0.3-0.4	-	52147-A
HA10	HA10	22/02/2011	0.0-0.1	Metals, TPH, PAH, Asbestos	52147
	HA10	22/02/2011	0.3-0.4	-	52147
	HA10	22/02/2011	0.6-0.7	-	52147
HA11	HA11	22/02/2011	0.0-0.1	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52147
	HA11	22/02/2011	0.3-0.4	Metals, Asbestos	52147
	HA11	22/02/2011	0.5-0.6	-	52147
	HA11	22/02/2011	0.7-0.8	-	52147
	HA11	22/02/2011	0.8-0.9	Metals, Asbestos	52147
HA12	HA12	22/02/2011	0.0-0.1	-	52147
	HA12	22/02/2011	0.3-0.4	-	52147
	HA12	22/02/2011	0.5-0.6	-	52147
	HA12	22/02/2011	0.7-0.8	-	52147
HA13	HA13	22/02/2011	0.0-0.1	Metals, Asbestos	52147
	HA13	22/02/2011	0.2-0.3	-	52147
HA14	HA14	22/02/2011	0.0-0.1	-	52147
	HA14	22/02/2011	0.2-0.4	-	52147
	HA14	22/02/2011	0.5-0.6	-	52147
	HA14	22/02/2011	1.0-1.1	-	52147
HA15	HA15	22/02/2011	0.0-0.1	Metals, TPH, PAH, BTEX	52147
	HA15	22/02/2011	0.3-0.4	-	52147-A
	HA15	22/02/2011	0.5-0.6	-	52147
BH16	BH16	22/02/2011	0.2-0.3	-	52147
	BH16	22/02/2011	0.6-0.8	-	52147
HA17	HA17	22/02/2011	0.0-0.1	-	52147
	HA17	22/02/2011	0.2-0.3	-	52147
	HA17	22/02/2011	0.4-0.5	-	52147
	HA18	22/02/2011	0.0-0.2	-	52147

Project Number: 41486
Hurstville Private Hospital
Table A Soil Sample Register

Location	Sample ID	Date	Sample Depth	Analytes	Report #
HA18	HA18	22/02/2011	0.3-0.4	-	52147
	HA18	22/02/2011	0.5-0.6	-	52147
F1	BH03/MW03	22/02/2011		Asbestos Identification	52147
F2	HA12	22/02/2011		Asbestos Identification	52147
QA / QC					
QA1	HA15	22/02/2011	0.0-0.1	Metals, TPH, PAH, BTEX	52147
QC1	HA15	22/02/2011	0.0-0.1	Metals, TPH, PAH, BTEX	SE100099
QA2	HA08	22/02/2011	0.0-0.1	-	52147
QC2	HA08	22/02/2011	0.0-0.1	-	52147
Trip Spike		22/02/2011		BTEX	52147
Trip Blank		22/02/2011		BTEX	52147
Rinsate		22/02/2011		Metals, TPH, PAH, BTEX	52147

Project Number: 41486
Hurstville Private Hospital
Table B Soil Results - Heavy Metals and Asbestos Concentrations

			Metals								Asbestos		
			Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Asbestos ID	Asbestos Trace Analysis	Asbestos Respirable Fibres
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		g/kg	
EQL			4	0.5	1	1	1	0.1	1	1		0.1	detect
NEPM 1999 HIL A			**100**	**20**		**1000**	**300**	**15**	**600**	**7000**			
ID	**Depth**	**Date**											
BH01/MW01	0.2-0.4	21/02/2011	<4	<0.5	15	21	18	<0.1	7	34	-	<0.1	ND
BH01/MW01	0.8-1.0	21/02/2011	-	-	-	-	-	-	-	-	-	<0.1	ND
BH02/MW02	0 - 0.1	21/02/2011	<4	<0.5	21	43	38	<0.1	21	100	-	<0.1	ND
BH02/MW02	0.3-0.5	21/02/2011	<4	<0.5	25	37	34	0.2	57	59	-	<0.1	ND
BH03/MW03	0 - 0.1	21/02/2011	4	<0.5	9	15	100	<0.1	3	49	-	<0.1	ND
BH04/MW04	0.2-0.3	22/02/2011	6	<0.5	8	51	14	<0.1	6	49	-	<0.1	ND
BH04/MW04	0.5-0.7	22/02/2011	16	<0.5	8	49	40	<0.1	11	44	-	<0.1	ND
BH05	0.25	21/02/2011	6	<0.5	17	52	110	0.1	6	180	-	<0.1	ND
HA07	0 - 0.1	22/02/2011	74	<0.5	3	2	18	0.2	2	35	-	<0.1	ND
HA08	0 - 0.1	22/02/2011	<4	<0.5	12	18	26	<0.1	31	49	-	<0.1	ND
HA08	0.3-0.4	22/02/2011	<4	<0.5	18	20	33	<0.1	38	51	-	<0.1	ND
HA09	0 - 0.1	22/02/2011	13	0.9	23	63	**430**	1	8	630	-	<0.1	ND
HA09	0.3-0.4	22/02/2011	5	<0.5	17	8	44	0.3	4	200	-	-	-
HA10	0 - 0.1	22/02/2011	<4	<0.5	6	6	8	<0.1	4	25	-	<0.1	ND
HA11	0 - 0.1	22/02/2011	<4	<0.5	5	19	21	<0.1	3	160	-	<0.1	ND
HA11	0.3-0.4	22/02/2011	5	<0.5	11	12	69	<0.1	3	59	-	<0.1	ND
HA11	0.8-0.9	22/02/2011	8	<0.5	31	23	**480**	0.3	13	180	-	<0.1	ND
HA13	0 - 0.1	22/02/2011	<4	<0.5	33	9	11	<0.1	6	29	-	<0.1	ND
HA15	0 - 0.1	22/02/2011	4	<0.5	11	27	180	0.2	5	100	-	<0.1	ND
F1	0.0-0.1	22/02/2011	-	-	-	-	-	-	-	-	Chrysotile & Amosite asbestos detected	-	-
F2	0.0-0.1	22/02/2011	-	-	-	-	-	-	-	-	ND	-	-

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Table C Soil Results - TPH, BTEX and PAH Concentrations

			BTEX						PAH																TPH				
			Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)&(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAHs	TPH C6 - C9	TPH C10 - C14	TPH C15 - C28	TPH C29-C36	TPH+C10 - C36 (Sum of total)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	1	0.5	2	1		0.1	0.1	0.1	0.1	0.05	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	25	50	100	100	
NEPM 1999 HIL A			**1**	**130**	**50**			**25**					**1**											**20**	**65**				**1000**
ID	**Depth**	**Date**																											
BH01/MW01	0.2-0.4	21/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	0.2	0.8	0.6	1.1	0.4	0.7	<0.1	1.8	<0.1	0.4	<0.1	1.1	1.6	8.95	<25	<50	<100	<100	<250
BH02/MW02	0 - 0.1	21/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	<0.1	0.1	0.2	0.3	0.1	0.1	<0.1	0.3	<0.1	0.1	<0.1	0.1	0.3	1.63	<25	<50	250	400	675
BH02/MW02	0.3-0.5	21/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03/MW03	0 - 0.1	21/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	<0.1	0.2	0.2	0.3	0.1	0.1	<0.1	0.4	<0.1	0.1	<0.1	0.2	0.4	2.30	<25	<50	<100	<100	<250
BH04/MW04	0.2-0.3	22/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.55	<25	<50	<100	<100	<250
BH04/MW04	0.5-0.7	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	0.25	21/02/2011	-	-	-	-	-	-	<0.1	0.1	0.2	0.7	0.7	1	0.4	0.6	<0.1	1.5	<0.1	0.4	<0.1	1	1.4	8.20	<25	<50	<100	<100	<250
HA07	0 - 0.1	22/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.55	<25	<50	<100	<100	<250
HA08	0 - 0.1	22/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	<0.1	0.1	0.2	0.3	0.1	0.2	<0.1	0.5	<0.1	0.1	<0.1	0.3	0.5	2.55	<25	<50	<100	<100	<250
HA08	0.3-0.4	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA09	0 - 0.1	22/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	<0.1	0.4	0.5	0.8	0.3	0.4	<0.1	1	<0.1	0.3	<0.1	0.5	0.9	5.40	<25	<50	<100	<100	<250
HA09	0.3-0.4	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA10	0 - 0.1	22/02/2011	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.55	<25	<50	<100	<100	<250
HA11	0 - 0.1	22/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.55	<25	<50	<100	<100	<250
HA11	0.3-0.4	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA11	0.8-0.9	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA13	0 - 0.1	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA15	0 - 0.1	22/02/2011	<0.5	<1	<0.5	<2	<1	<3	<0.1	0.6	0.7	2.1	**2.3**	3.5	1.2	2.1	0.3	5.3	0.3	1.4	<0.1	3.7	4.7	**27.60**	<25	<50	<100	<100	<250
HA15	0.3-0.4	22/02/2011	-	-	-	-	-	-	<0.1	<0.1	<0.1	0.2	0.2	0.3	0.1	0.2	<0.1	0.6	<0.1	0.1	<0.1	0.4	0.5	2.80	-	-	-	-	-

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Table D Soil Results - OCP, OPP and PCB Concentrations

			Organochlorine Pesticides																				Organophosphorous Pesticides								Polychlorinated Biphenyls							
			4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 1999 HIL A						**10**		**50**					**200**									**10**																	
ID	**Depth**	**Date**																																				
BH01/MW01	0.2-0.4	21/02/2011	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH02/MW02	0 - 0.1	21/02/2011	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH02/MW02	0.3-0.5	21/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03/MW03	0 - 0.1	21/02/2011	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH04/MW04	0.2-0.3	22/02/2011	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH04/MW04	0.5-0.7	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	0.25	21/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA07	0 - 0.1	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA08	0 - 0.1	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA08	0.3-0.4	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA09	0 - 0.1	22/02/2011	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA09	0.3-0.4	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA10	0 - 0.1	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA11	0 - 0.1	22/02/2011	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA11	0.3-0.4	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA11	0.8-0.9	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA13	0 - 0.1	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA15	0 - 0.1	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA15	0.3-0.4	22/02/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table E Groundwater Sampling Register

Well Number	Date Sampled	Date Installed	Analytes	Report #
BH01/MW01	4/03/2011	22/02/2011	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52672
BH02/MW02	4/03/2011	22/02/2011	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52672
BH03/MW03	4/03/2011	22/02/2011	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52672
BH04/MW04	4/03/2011	22/02/2011	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52672
QA / QC				
QA1	4/03/2011	MW04	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	52672
QC1	4/03/2011	MW04	Metals, TPH, BTEX, PAH, OCP/OPP/PCB	SE100137
Rinsate	4/03/2011	Rinsate	Metals, TPH, BTEX, PAH	52672
Trip Spike	4/03/2011	Trip Spike	BTEX	52672
Trip Blank	4/03/2011	Trip blank	BTEX	52672

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Table F - Gauging and Observations

Sample ID	Date gauged	Depth to Water			Physical Parameters						Observations
		Relative Level (m AHD)	Depth to water (m)	Relative Height of Water (m AHD)	Dissolved oxygen (mg/L)	Electrical Conductivity (mS/cm)	pH	Redox (mV) (converted to eH)	Total Dissolved Solids (ppm)	Temperature (C)	
MW01	4/03/2011	9.236	1.664	7.572	2.19	1.86	4.86	177	1040	22	No odour, clear to brown, slightly turbid, slight sheen
MW02	4/03/2011	10.201	2.509	7.692	2.39	0.89	4.9	290	465	20.9	No odour, clear no turbidity, no sheen
MW03	4/03/2011	10.012	3.437	6.575	0.92	2.66	4.9	133	1500	22.0	No odour, brown, very turbid, no sheen
MW04	4/03/2011	9.284	0.925	8.359	0.5	3.49	5.78	130	2000	24.4	No odour, clear no turbidity, no sheen

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Table G Groundwater Results - Heavy Metal Concentrations

		Metals							
		Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		1	1	1	1	1	0.4	1	1
ANZECC 2000 FW 95%			**0.2**		**1.4**	**3.4**	**0.6**	**11**	**8**
NEPM Drinking		*7*	*2*		*2000*	*10*	*1*	*20*	*3000*
ID	**Date**								
MW01	4/03/2011	2	0.1	<1	**5**	<1	<0.4	**20**	**72**
MW02	4/03/2011	<1	<0.1	<1	**3**	<1	<0.4	1	**9**
MW03	4/03/2011	2	0.2	<1	**10**	<1	<0.4	9	**48**
MW04	4/03/2011	*14*	<0.1	<1	<1	<1	<0.4	***29***	**58**

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Table H Groundwater Results - TPH, BTEX and PAH Concentrations

		BTEX						PAH															TPH				
		Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)&(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	TPH C6 - C9	TPH C10 - C14	TPH C15 - C28	TPH C29-C36	TPH+C10 - C36 (Sum of total)
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		1	1	1	2	1		1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	10	50	100	100	
ANZECC 2000 FW 95%		**950**				**350**				**0.4**		**0.2**					**1.4**			**16**	**2**						**600**
NEPM Drinking		*1*	*300*	*800*			*600*																				
ID	**Date**																										
MW01	4/03/2011	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<50	<100	<100	<250
MW02	4/03/2011	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	1.3	<1	<1	<10	340	<100	<100	440
MW03	4/03/2011	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<50	<100	<100	<250
MW04	4/03/2011	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<50	<100	<100	<250

Project Number: 41486
Hurstville Private Hospital
Table I Groundwater Results - OCP, OPPs and PCB Concentrations

		Organochlorine Pesticides																					Organophosphorous Pesticides								Polychlorinated Biphenyls						
		4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Fenitrothion	Ronnel	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0002	0.2	0.2	0.2	0.2	0.2	2	2	2	2	2	2	2
ANZECC 2000 FW 95%											**0.01**						**0.02**		**0.2**	**0.09**				**0.01**			**0.01**	**0.15**		**0.2**						**0.6**		**0.03**	
NEPM Drinking				*0.3*							*20*		*0.3*							*0.3*																		
ID	**Date**																																					
MW01	4/03/2011	<0.2	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<2	<2	<2	<2	<2
MW02	4/03/2011	<0.2	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<2	<2	<2	<2	<2
MW03	4/03/2011	<0.2	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<2	<2	<2	<2	<2
MW04	4/03/2011	<0.2	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<2	<2	<2	<2	<2

Appendix A

Soil Field Documentation

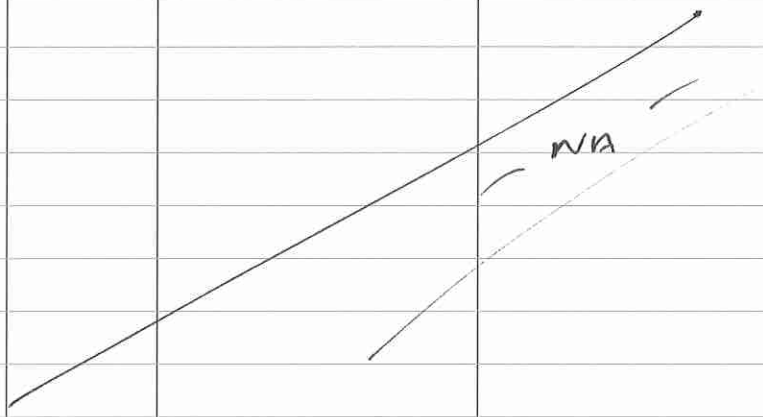
Field Equipment Calibration and Decontamination

JBS ENVIRONMENTAL

PROJECT NAME:	Continuum Healthcare - Hurstville	**PROJECT NO:**	41486
FIELD DATES:	21/2/11	**FIELD STAFF:**	C. Roberts, N. Cussen

CALIBRATION SUMMARY	NA
EQUIPMENT:	- NA -
CALIBRATION STANDARD:	- NA -

DATE	TIME	READING (ppm_v)	COMMENTS



DECONTAMINATION SUMMARY

EQUIPMENT: Hand Auger decontaminated at each sample area, new nitrile gloves used at each sample.

1. Was the equipment decontaminated appropriately prior to sampling at each location?	(Y)	N	NA
2. Was excess soil removed by scraping, brushing or wiping with disposable towels?	(Y)	N	(NA)
3. Was the equipment contaminated with grease, tar or similar material? If so, was the equipment steam cleaned or rinsed with pesticide-grade acetone:hexane?	Y Y	N N	(NA)
4. Was phosphate-free detergent used to wash the equipment?	(Y)	N	NA
5. Was the equipment rinsed with clean water?	(Y)	N	NA
6. Was the equipment then rinsed with deionised water?	(Y)	N	NA
7. Were all sample containers cleaned and acid or solvent washed prior to sample collection?	Y	N	(NA)

WERE ANY ADDITIONAL DECONTAMINATION MEASURES REQUIRED? PROVIDE DETAILS.

Daily Field Report

Page __ of __

Date: 21/2/11
Arrival Time 7am
Depart Time 4:15pm
Site Address Gloucester Rd Hurstville.

Completed by Claudia Roberts
Weather Fine
Subcontractor(s)

Purpose of Visit excavation of Bore holes & monitoring wells from hand augers and drilling.

Notes

(include sketch or attach site map/plan)

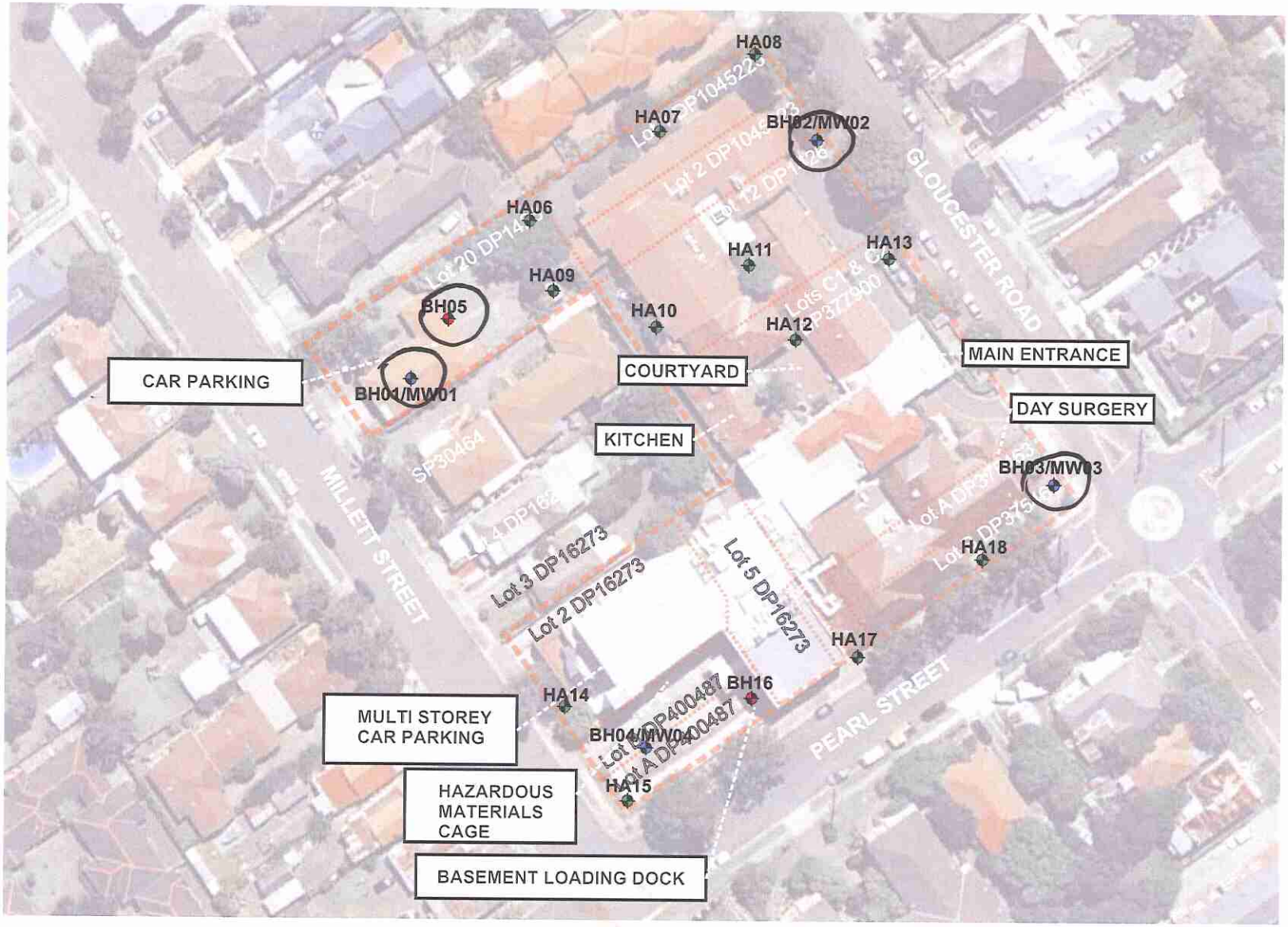
- Arrive at Site 7am
- Review JRA with N. Cussen,
- Conducted Site walkover
- Installed BH / MW
  - BH01/MW01
  - BH02/MW02
  - BH03/MW03
  - BH05
  from which samples were collected as per SAQP
- No QA/QC Samples collected
- logs attached
- Map attached.
- Site left clean, all BH/MW left flush.
- photos taken of all BH/MW areas post work.

Associated Completed Forms

(eg, bore logs, PID/XRF calibration forms)

PO Box 940, Mascot NSW 1460 • Phone: 8338 1013 • Fax: 8338 1700 • E-mail: jbs@jbsgroup.com.au

Map Map 21.2.11



O indicates sample locations marked on the 21.2.11

SOURCE: GOOGLE EARTH 2011

SITE BOUNDARY
LOT BOUNDARIES
HOSPITAL FEATURE
PROPOSED BOREHOLE SOIL SAMPLE LOCATION
PROPOSED HAND AUGER SOIL SAMPLE LOCATION
PROPOSED GROUNDWATER MONITORING WELL LOCATION

JBS ENVIRONMENTAL

Figure 4: Proposed Soil and Groundwater Sample Locations

Client: Continuum Healthcare Group — Job No.: 41486

Project: Gloucester Road, Hurstville, NSW — File: 41486_03.cdr

JBS ENVIRONMENTAL — Drilling Log

Borehole # BH01/MW01

Project Hurstville - Glouster Rd Project No 41486
Total Hole Depth 9.3m Northing — Easting —
Top of Casing — Water Level Initial — Static —
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type/Size —
Drill Co NUMAC Method —
Driller DEAN Log By C. Roberts Date 21/2/11 Permit # —

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
0		0			Surface bitumen
		0.2-0.4			Fill: Silty Clay, light to medium brown, hetero, dry, soft, non plastic, medium to dense, fine to coarse gravel, poorly sorted.
		0.8-1.0			0.4: NATURAL, Silty Clay, med to dark brown, darker mottles, shale inclusions, dense, mod plasticity 0.8: As above
4					
5		2.5-2.7			2.5: NATURAL Shale: brown, homo, dry, firm, stiff, non plastic, dense, fine gravels.
6		4.5-4.7			4.5: As above, change to clayey brown
		7.5-7.8			7.5: As above, increased moisture with depth
		9.0-9.3			9.0: As above, increased moisture wet.
9.3					EOH @ 9.3m, refusal on shale.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # BH02/MW02

Project Hunstville-Glouster Rd Project No 44486
Total Hole Depth 10m Northing — Easting —
Top of Casing — Water Level Initial — Static —
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type/Size —
Drill Co NUMAC Method SFA
Driller Dean Log By C. Roberts Date 21/2/11 Permit # —

COMMENTS
No groundwater detected.

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
0					Surface → Topsoil Gardenbed.
		0 – 0.1			0.1, FILL: Silty Sandy Clay, dark brown, with inclusions of plant material (40% approx), hetero, dry, non plastic
		0.3 – 0.5			0.3, FILL: silty sandy clay, dark brown, hetero, dry, soft, non plastic, loose to medium density, fine, poorly sorted, large igneous gravels, plastic & metal fragments.
4		0.5 – 0.7			0.5, FILL: Silty clay, light to med brown, hetero, damp, firm to stiff, low plasticity, dense, fine-coarse.
5					
6		1.0 – 1.2			1.0, NATURAL: Silty clay, mottled brown, red, grey, homo, damp, firm, moderate plasticity, dense, poorly sorted.
		3.0 – 3.5			3.0 NATURAL: Shale, Red, White, grey, damp, stiff, dense, ~~mod~~ moderate plastic, poorly sorted.
		9.8 – 10			5.0: NATURAL: Shale, grey, damp to moist, firm, moderate plasticity
					9.0: As above, increase in moisture with depth
10					Eoh @ 10.0m, program depth.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted (well graded)	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	well sorted (poorly graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel		little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel		trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand		Contamination
TOPSOIL		grey	root holes		hard					
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # BH03/MW03

Project Glouster Rd- Hurstville Project No 41486
Total Hole Depth 10.5m Northing — Easting —
Top of Casing — Water Level Initial — Static —
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type/Size —
Drill Co NUMAC Method SFA
Driller Dean Log By C Roberts Date 21/2/11 Permit # —

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
0		0			GRASS
		0-0.1			0.1 FILL: Silty Clay, Brown, Dark brown, hetero, dry, soft, non-plastic medium dense, fine, poorly sorted with inclusions of Shale gravels, concrete & plastic
		0.3-0.5			
		0.5-0.7			0.5 NATURAL: Silty Clay, dark to medium brown with black-red mottles. hetero, dry, v. stiff, Low plasticity, dense, poorly sorted.
4					
		1.0-1.2			1.0 - NATURAL: Shale, light brown to dark brown, dry, non plastic coarse gravels, hetero
5					
6		2.5-2.7			2.5 - As above with increased moisture
					4.0 - as above, grey, increased plasticity
7.5					8.0 - grey to dark brown clay, nono, damp, moderate plasticity
					Eoh @ 10.5m program depth.
10.5					

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # BH05

Project Hurstville - Gloucester Rd Project No 44486

Total Hole Depth 0.7m Northing — Easting —

Top of Casing — Water Level Initial — Static —

Screen: Dia — Length — Type/Size —

Casing: Dia — Length — Type/Size —

Drill Co NUMAC Method —

Driller DEAN Log By C. Roberts Date 21/2/11 Permit # —

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
0					Surface: Asphalt
					0.15: FILL, Bitumen, No Sample Collected.
		0.15-0.25			0.25: FILL, Silty clay, light brown, grey white, dry, hetero, soft, non plastic, dense, poorly sorted igneous gravel inclusions.
		0.25-0.5			0.5: NATURAL: Silty clay, brown, grey, white, dry, soft non plastic, less igneous gravel intrusions
					Eoh @ 0.7m, reached Natural.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

Field Equipment Calibration and Decontamination

JBS ENVIRONMENTAL

PROJECT NAME: Continuum Healthcare - Hurstville	**PROJECT NO:** 41486
FIELD DATES: 22/2/11	**FIELD STAFF:** C. Roberts, N. Cussen

CALIBRATION SUMMARY NA
EQUIPMENT:
CALIBRATION STANDARD:

DATE	TIME	READING (ppm$_v$)	COMMENTS
			NA

DECONTAMINATION SUMMARY

EQUIPMENT: Hand Auger decontaminated at each sample area, new nitrile gloves used for each sample

1. Was the equipment decontaminated appropriately prior to sampling at each location?	(Y)	N	NA
2. Was excess soil removed by scraping, brushing or wiping with disposable towels?	(Y)	N	NA
3. Was the equipment contaminated with grease, tar or similar material? If so, was the equipment steam cleaned or rinsed with pesticide-grade acetone:hexane?	Y Y	N N	(NA)
4. Was phosphate-free detergent used to wash the equipment?	(Y)	N	NA
5. Was the equipment rinsed with clean water?	(Y)	N	NA
6. Was the equipment then rinsed with deionised water?	(Y)	N	NA
7. Were all sample containers cleaned and acid or solvent washed prior to sample collection?	Y	N	(NA)

WERE ANY ADDITIONAL DECONTAMINATION MEASURES REQUIRED? PROVIDE DETAILS.

Daily Field Report

Date: 22/2/11
Arrival Time 7am
Depart Time 1pm
Site Address Glauster Rd, Hurstville

Completed by Claudia Roberts
Weather Overcast.
Subcontractor(s)

Purpose of Visit Drilling BH04/MW04, installation of the well, in addition to HA 05 to HA08

Notes

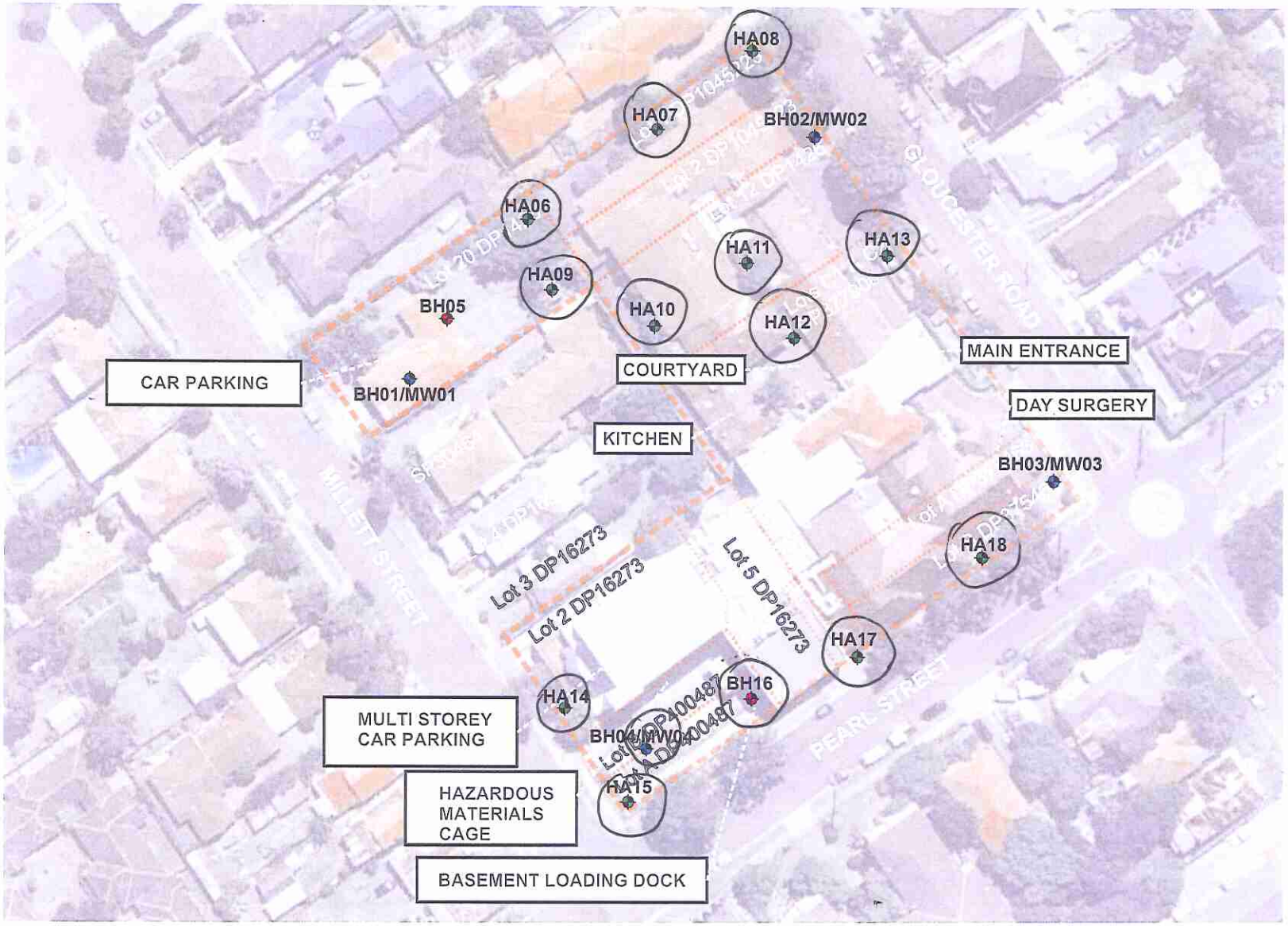
(include sketch or attach site map/plan)

- Arrive on Site 7am
- review Safety documents on site
- Supervise drilling of BH04/MW04 in near carpark in addition to BH16
- installation of MW04, and develop the well.
- ensure the carpark area is clean and cleared of any trip hazards, including appropriate capping of MW04.
- drillers signed out at 10:30am.
- manual excavation of HAugers, areas indicated on map.
  - HA 06
  - HA 07
  - HA 08
  - HA 09
  - HA 10
  - HA 11
  - HA 12
  - HA 13
  - HA 14
  - HA 15
  - BH 16
  - HA 17
  - HA 18
- Bore logs attached
- Map attached
- QA/QC 01 (HA15 0.0-0.1)
- QA/QC 02 (HA08 0.0-0.1)
- from which samples were taken as per SAQP.

Associated Completed Forms

(eg, bore logs, PID/XRF calibration forms)

PO Box 940, Mascot NSW 1460 • Phone: 8338 1013 • Fax: 8338 1700 • E-mail: jbs@jbsgroup.com.au



O - sample locations installed on the 22.2.11

SOURCE: GOOGLE EARTH 2011

SITE BOUNDARY
LOT BOUNDARIES
HOSPITAL FEATURE
PROPOSED BOREHOLE SOIL SAMPLE LOCATION
PROPOSED HAND AUGER SOIL SAMPLE LOCATION
PROPOSED GROUNDWATER MONITORING WELL LOCATION

JBS ENVIRONMENTAL

Figure 4: Proposed Soil and Groundwater Sample Locations

Client: Continuum Healthcare Group	Job No.: 41486
Project: Gloucester Road, Hurstville, NSW	File: 41486_03.cdr

JBS ENVIRONMENTAL — Drilling Log

Borehole # BH04 / MW04

Project Glouster St Kurstville Project No 41486

Total Hole Depth 9.6 Northing _____ Easting _____

Top of Casing _____ Water Level Initial _____ Static _____

Screen: Dia _____ Length 4m Type/Size _____

Casing: Dia _____ Length 3.6 Type/Size _____

Drill Co NUMAC Method _____

Driller DEAN Log By C. Roberts Date 22/2/11 Permit # _____

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
		0 - 0.15			0.15 – concrete surface (NS)
		0.2 - 0.3			0.2 Fill: Silty clay, light to med. brown, hetero, dry, soft, non-plastic, med-dense, coarse gravels, to cobbles, inclusions of shale fragments, and igneous gravel.
		0.5 - 0.7			0.5 Fill, Silty Clay, as above, less inclusions of shale fragments.
		2.2 - 2.4			2.2 - as above, darker browns to grey.
		3.6			3.9 - as above, grey to black
		4.6			7.2 as above, black
		3.9 - 4.5			9.8 - as above, wet
		5.6			
		7.2 - 7.5			
		9.5 - 9.6			
		9.6m			Eoh @ 9.6 program depth.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA06

Project Hurstville Private Hospital Project No 41486

Total Hole Depth 0.4 Northing - Easting -

Top of Casing - Water Level Initial - Static -

Screen: Dia - Length - Type/Size -

Casing: Dia - Length - Type/Size -

Drill Co JBS Method Manual Excavation

Driller Nathan Log By Nathan Date 22.2.11 Permit #

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
					Garden Bed: Mulch
	0.0				0.0
		0.0 - 0.1			Fill: silty clay dark brown moist damp firm low to moderate plasticity with inclusions of mulch (wood) shale gravels & plastic
		0.3 - 0.4			
	0.6				0.6
		0.6 - 0.7			silty CLAY mottled grey orange moist damp firm moderate plasticity with inclusions of shale gravels
	0.4				0.4
					End of Hole @ 0.4 m. Program Depth

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL CLAY SILT SAND GRAVEL TOPSOIL PEAT	clayey silty sandy gravelly organic	red yellow white black brown grey mottled	homogenous heterogeneous stratified laminated lens root holes occasional	dry damp moist wet saturated	very soft soft firm stiff very stiff hard	non-plastic low plasticity mod plasticity high plasticity	very loose loose medium dense dense very dense	boulders cobbles coarse gravel fine gravel coarse sand	poorly sorted (well graded) well sorted (poorly graded)	and (35-50%) some (20-35%) little (10-20%) trace (0-10%)
										Contamination
										odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA BH07

Project Glouster Rd Hurstville Project No 41486

Total Hole Depth 0.9m Northing – Easting –

Top of Casing – Water Level Initial – Static –

Screen: Dia – Length – Type/Size –

Casing: Dia – Length – Type/Size –

Drill Co – Method Hand Auger

Driller Claudia Roberts Log By Claudia Roberts Date 22/2/11 Permit # –

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
					0.1
		0 - 0.1			Crushed Shale Surface, yellow-white dry, stiff, non plastic, loose, cobbles - gravel
0.1					Fill: Silty clay, light brown, hetero genous, dry, firm, non plastic, loose, coarse to fine Shale gravel inclusions & presence of sandstone.
		0.2-0.3			
					0.2
0.5		0.5-0.6			As above increased presence of Sandstone.
0.8		0.8-0.9			As above, large cobbles to boulders of Sandstone
					Eoh @ 0.9m, refusal at Sandstone boulders.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA08

Project Hurstville Private Hospital Project No 41486

Total Hole Depth 1.5 Northing _____ Easting _____

Top of Casing _____ Water Level Initial _____ Static _____

Screen: Dia _____ Length _____ Type/Size _____

Casing: Dia _____ Length _____ Type/Size _____

Drill Co JBS Method Manual Excavation (HA)

Driller Nathan Log By Nathan Date 22.2.11 Permit # _____

COMMENTS

QA2 / QC2 collected @ sample location HA08 0.0 - 0.1

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
					Garden Bed
	0.0				0.0
		0.0 - 0.1 QA2/QC2			FILL: silty clay brown hetero dry firm non plastic with inclusions of igneous gravels concrete plant material & plastic
		0.3 - 0.4			
		0.5 - 0.6			
		1.0 - 1.1			
	1.1				1.1
		NS			silty ~~CLAY~~ mottled orange brown hetero damp firm to stiff low plasticity with inclusions of shale gravels
	1.5				1.5
					End of Hole @ 1.5 m. Program Depth

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	Contamination
TOPSOIL		grey	root holes		hard					
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA09

Project Hurstville Private Hospital Project No 41486

Total Hole Depth 0.8 Northing _____ Easting _____

Top of Casing _____ Water Level Initial _____ Static _____

Screen: Dia _____ Length _____ Type/Size _____

Casing: Dia _____ Length _____ Type/Size _____

Drill Co JBS Method Manual Excavation

Driller Nathan Log By Nathan Date 22.2.11 Permit # _____

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
					Garden Bed
	0.0				0.0
		0.0 - 0.1			FILL: silty clay dark brown hetero damp firm low to moderate plasticity with inclusions of wooden mulch chips, plastic & shale & igneous gravels
		0.3 - 0.4			
	0.5				0.5
		NS			silty CLAY mottled grey orange hetero damp firm moderate plasticity with inclusions of shale gravels
	0.8				0.8
					Program Depth 0.8 m

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA10

Project Hurstville Private Hospital Project No 41486

Total Hole Depth ~~0.8m~~ 0.8m Northing - Easting -

Top of Casing - Water Level Initial - Static -

Screen: Dia - Length - Type/Size -

Casing: Dia - Length - Type/Size -

Drill Co JBS Method Manual Excavation (HA)

Driller Nathan Log By Nathan Date 22.2.11 Permit #

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
	0.0	0.0-0.1 0.3-0.4			Ground Surface = Garden Bed 0.0 Fill: silty sand brown humid dry loose fine grained poorly sorted with inclusion of igneous & shale gravels, concrete, terracotta fragments
	0.45	0 0.6-0.7			0.45 Fill: crushed sandstone dark brown fine grained
	0.8				0.8 Refusal on sandstone gravels @ 0.8 m

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL CLAY SILT SAND GRAVEL TOPSOIL PEAT	clayey silty sandy gravelly organic	red yellow white black brown grey mottled	homogenous heterogeneous stratified laminated lens root holes occasional	dry damp moist wet saturated	very soft soft firm stiff very stiff hard	non-plastic low plasticity mod plasticity high plasticity	very loose loose medium dense dense very dense	boulders cobbles coarse gravel fine gravel coarse sand	poorly sorted (well graded) well sorted (poorly graded)	and (35-50%) some (20-35%) little (10-20%) trace (0-10%) Contamination odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # MA11

Project Glouster Rd Hurstville Project No 41486

Total Hole Depth 1.3m Northing — Easting —

Top of Casing — Water Level Initial — Static —

Screen: Dia — Length — Type/Size —

Casing: Dia — Length — Type/Size —

Drill Co — Method Hand Auger

Driller N. Cussen Log By C. Roberts Date 22/2/11 Permit # —

COMMENTS: Potential ACM fragment found on surface F2

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
		F2 0			River pebble surface above geofabric.
		0.0.1			FILL Sandy Earth, dark brown, hetero, silty sand. damp, loose-med density, fine grained poorly sorted, inclusions of Shale, igneous gravels
		0.3–0.4			0.3: FILL Silty Sand, yellow & lighter brown, hetero, damp, loose-med density, fine grained, low plasticity, inclusions of Shale, igneous gravel & SS.
		0.5–0.6			0.5 – NATURAL FILL Silty Sand, yellow & lighter brown, hetero, damp, loose-med density, fine grained, low plasticity, inclusions of Shale, igneous gravel & SS.
		0.7–0.8			0.7 – FILL Silty sand with trace clays inclusions of Shale, igneousgravel, SS & plastics,
		0.8–0.9			0.8 – FILL Sandy clay, brown & organge, grey yellow, hetero, damp, mod to stiff mod-plasticity, inclusions of igneous, Shale gravels & terracotta.
1.3m					1.3m EOh refusal on Shale

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	Contamination
TOPSOIL		grey	root holes		hard					odour
PEAT		mottled	occasional							

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA12

Project Glouster Rd Hurstville Project No 41486
Total Hole Depth 1m Northing — Easting —
Top of Casing — Water Level Initial — Static —
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type/Size —
Drill Co — Method Hand Auger
Driller N. Cussen Log By Claudia R. Date 22/2/11 Permit # —

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
		0–0.1			Sandy Silt, hetero, damp, dark brown, ~~medium~~ ~~dense~~ firm, non plastic w inclusions of plant material & wooden mulch chips.
0.1					
		0.3–0.4			0.2 Silty clay, brown w orange & red mottles, hetero, damp, firm l–mod plastic w inclusions of igneous & shale gravels concrete & SS inclusions.
		0.5–0.6			As above, increase in moisture
					0.7
		0.7–0.8			NATURAL: Silty Clay, mottled orange and brown, hetro, stiff, mod plasticity, inclusions of shale gravels.
0.7					
					1.0m EOH program depth.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA13

Project Glouster Rd Hurstville Project No 411486

Total Hole Depth 0.3m Northing – Easting –

Top of Casing – Water Level Initial – Static –

Screen: Dia – Length – Type/Size –

Casing: Dia – Length – Type/Size –

Drill Co – Method Hand Auger.

Driller Claudia Roberts Log By Claudia Roberts Date 22/2/11 Permit # –

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
0.1		0 – 0.1			0.1 Topsoil, FILL: Organic plant material ~~black~~ dark brown, hetero, dry, soft, no plastic loose, 0.2
		0.2 – 0.3			0.2 FILL: Silty clay, light - med brown, hetero, dry, soft non plastic inclusions of igneous rocks, concrete material & fragments of terracotta pipes. 0.3
					Eoh @ 0.3m, refusal on concrete.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # ~~HA14~~ HA14

Project Hurstville Private Hospital Project No 41486

Total Hole Depth 1.2 Northing - Easting -

Top of Casing - Water Level Initial - Static -

Screen: Dia - Length - Type/Size -

Casing: Dia - Length - Type/Size -

Drill Co JBS Method Manual Excavation

Driller Nathan Log By Nathan Date 22.2.11 Permit # -

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
					Garden Bed : Loose Dirt
	0.0				0.0
		0.0 - 0.1			Fill: silty sand brown hetero dry loose fine grained poorly sorted with inclusions of shale gravels, concrete, plastic & metal
	0.2				0.2
		0.3 - 0.4 0.5 - 0.6 1.0 - 1.1			Fill: silty clay brown hetero dry loose to firm non plastic with inclusions of igneous gravels, shale gravels, plastic & concrete
	1.2				1.2
					Refusal on Shale @ 1.2 m Bed Rock

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA15

Project Hurstone Private Hospital Project No 41486
Total Hole Depth 0.8M Northing – Easting –
Top of Casing – Water Level Initial – Static –
Screen: Dia – Length – Type/Size –
Casing: Dia – Length – Type/Size –
Drill Co JBS Method Manual Excavation
Driller Nathan Log By Nathan Date 22-2-11 Permit #

COMMENTS
QA1/QC1 collected @ HA15 0.0 - 0.1

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
					Grass
0.0					0.0
		0.0 - 0.1 QA1/QC1			FILL: silty clay brown hetero dry loose to firm non plastic with inclusions of igneous & shale gravels, glass & plastic
		0.2 - 0.4			
0.5	0.5				0.5
		0.5 - 0.6			silty CLAY brown hetero dry to damp firm low plasticity with inclusions of shale gravels
0.7	0.7				0.7
		NS			SHALE brown dry
0.8	0.8				0.8
					Refusal on Shale
					End of Hole Program Depth @ 0.8 m

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL CLAY SILT SAND GRAVEL TOPSOIL PEAT	clayey silty sandy gravelly organic	red yellow white black brown grey mottled	homogenous heterogeneous stratified laminated lens root holes occasional	dry damp moist wet saturated	very soft soft firm stiff very stiff hard	non-plastic low plasticity mod plasticity high plasticity	very loose loose medium dense dense very dense	boulders cobbles coarse gravel fine gravel coarse sand	poorly sorted (well graded) well sorted (poorly graded)	and (35-50%) some (20-35%) little (10-20%) trace (0-10%) Contamination odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # BH16

Project Glouster Rd Hurstville Project No 41486

Total Hole Depth 1m Northing — Easting —

Top of Casing — Water Level Initial — Static —

Screen: Dia — Length — Type/Size —

Casing: Dia — Length — Type/Size —

Drill Co NUMAC Method

Driller DEAN Log By Claudia Date 22/2/11 Permit # —

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
		~~0.0-0.2~~			~~Concrete~~ Concrete N/S
					0-0.2
		0.2-0.3			Natural: Silty clay, light brown, dry, soft, non-plastic, medium loose, fine gravel ~~and coarse sand~~ enclusions of shale gravels.
		0.6-0.8			As above, darker brown.
					0.6
					Eoh @ 1.0m, program depth.

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL	clayey	red	homogenous	dry	very soft	non-plastic	very loose	boulders	poorly sorted	and (35-50%)
CLAY	silty	yellow	heterogeneous	damp	soft	low plasticity	loose	cobbles	(well graded)	some (20-35%)
SILT	sandy	white	stratified	moist	firm	mod plasticity	medium dense	coarse gravel	well sorted	little (10-20%)
SAND	gravelly	black	laminated	wet	stiff	high plasticity	dense	fine gravel	(poorly	trace (0-10%)
GRAVEL	organic	brown	lens	saturated	very stiff		very dense	coarse sand	graded)	
TOPSOIL		grey	root holes		hard					Contamination
PEAT		mottled	occasional							odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA17

Project Gloucester Rd Hurstville Project No 41486
Total Hole Depth 0.5m Northing – Easting –
Top of Casing – Water Level Initial – Static –
Screen: Dia – Length – Type/Size –
Casing: Dia – Length – Type/Size –
Drill Co – Method Hand Auger
Driller Claudia Roberts Log By Claudia Roberts Date 22/2/11 Permit # –

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
		0–0.1			Fill: 0.1 Topsoil, organic garden material, silty, sandy, black + dark brown, hetero, dry, soft, non plastic, loose, coarse to fine gravel.
		0.2–0.3			0.2 Fill: Silty clay, light brown, hetero, dry, firm, ~~dark~~ medium loose, fine to coarse gravel with shale inclusions of small to medium gravels.
		0.4–0.5			As 0.4 above, increased size of shale inclusions.
					Eoh @ 0.5m, refusal at shale gravels (not bedrock)

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL CLAY SILT SAND GRAVEL TOPSOIL PEAT	clayey silty sandy gravelly organic	red yellow white black brown grey mottled	homogenous heterogeneous stratified laminated lens root holes occasional	dry damp moist wet saturated	very soft soft firm stiff very stiff hard	non-plastic low plasticity mod plasticity high plasticity	very loose loose medium dense dense very dense	boulders cobbles coarse gravel fine gravel coarse sand	poorly sorted (well graded) well sorted (poorly graded)	and (35-50%) some (20-35%) little (10-20%) trace (0-10%) Contamination odour

JBS ENVIRONMENTAL — Drilling Log

Borehole # HA18

Project Hurstville Private Hospital Project No 41486

Total Hole Depth m/1.3m Northing – Easting –

Top of Casing – Water Level Initial – Static –

Screen: Dia – Length – Type/Size –

Casing: Dia – Length – Type/Size –

Drill Co JBS Method Hand Auger

Driller N. Cussen Log By N. Cussen. Date 22/2/11 Permit # –

COMMENTS

DEPTH (METRES)	WELL CONSTRUCTION	SAMPLE ID (INCL. QA/QC REFERENCE)	PID (PPM)	USCS CLASS	DESCRIPTION
	0.0				Gravel surface DIM 0.0
		0.0 - 0.1 0.3 - 0.4 0.5 - 0.6			Fill: silty clay brown hetero dry firm non plastic with inclusions of concrete shale & igneous gravels
	0.85				0.85
		NS			silty clay mottled orange & brown hetero dry firm to low plasticity with inclusions of shale gravels
	1.3				1.3 End of Hole. Program Depth 1.3 m

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
FILL CLAY SILT SAND GRAVEL TOPSOIL PEAT	clayey silty sandy gravelly organic	red yellow white black brown grey mottled	homogenous heterogeneous stratified laminated lens root holes occasional	dry damp moist wet saturated	very soft soft firm stiff very stiff hard	non-plastic low plasticity mod plasticity high plasticity	very loose loose medium dense dense very dense	boulders cobbles coarse gravel fine gravel coarse sand	poorly sorted (well graded) well sorted (poorly graded)	and (35-50%) some (20-35%) little (10-20%) trace (0-10%) Contamination odour

Appendix B

Borehole Logs

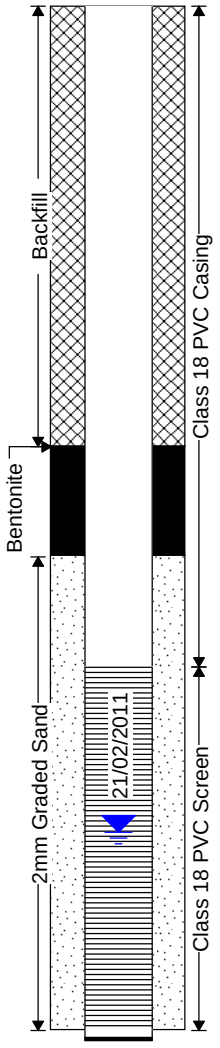
Borehole No.: BH01/MW01 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 9.3 m
Eastings: -
Northings: -
Date: 21/2/11

Driller and Co.: NUMAC Drilling
Drill Method: SFA
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	
0.0		Ground Surface					
		BITUMEN	0.2-0.4	D			
		FILL Silty clay: light to medium brown, heterogeneous, dry, soft, non plastic, with inclusions of fine to coarse gravel	0.8-1.0	D			
1.0							
		NATURAL Silty clay: medium to dark brown, darker mottles, shale inclusions, dense, moderate plasticity					
2.0			2.5-2.7	D			
		NATURAL Shale: brown, homogeneous, dry, firm, stiff, non plastic, dense, fine gravels					
3.0							
4.0							
			4.5-4.7	D			
		NATURAL Shale: brown, homogeneous, increased moisture, firm, stiff, non plastic, dense, fine gravels					
5.0							
6.0							
7.0							
			7.5-7.8	D			
		NATURAL Shale: brown, homogeneous, wet, firm, moderate plasticity, dense, fine gravels					
8.0							
9.0			9.0-9.3	D			
		End of hole at 9.3 m, refusal on shale					



Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

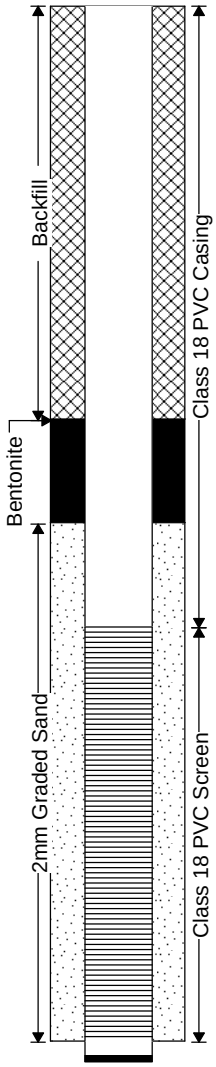
Borehole No.: BH02/MW02 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 10 m
Eastings: -
Northings: -
Date: 21/2/11

Driller and Co.: NUMAC Drilling
Drill Method: SFA
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	
0.0		Ground Surface					
		FILL Topsoil, organic plant material, dark brown, heterogeneous, dry, soft, non plastic	0-0.1	D			
			0.3-0.5	D			
			0.5-0.7	D			
1.0		**FILL** Silty sandy clay: dark brown, heterogeneous, dry, soft, non plastic, loose to medium density, fine, poorly sorted, large igneous gravels, plastic and metal fragments	1.0-1.2	D			
2.0							
		FILL Silty sandy clay: dark brown with inclusions of plant material (approx. 40%), heterogeneous, dry, non plastic					
3.0			3.0-3.5	D			
		NATURAL Silty clay: mottled brown red and grey, homogeneous, damp, firm, moderate plasticity, poorly sorted					
4.0							
		FILL Silty clay: light to medium brown, heterogeneous, damp, firm to stiff, low plasticity, dense					
5.0							
		NATURAL Shale: red white and grey, damp, stiff, dense, moderate plasticity, poorly sorted					
6.0							
		NATURAL Shale: grey increased moisture, moderate plasticity, homogeneous					
7.0							
8.0							
9.0		**NATURAL** Shale: grey damp to wet, moderate plasticity, homogenous					
			9.8-10.0	D			
10.0		End of hole at 10 m, program depth					



Sample Method	Sample Condition		
HA - Hand Auger SFA - Solid Flight Auger HFA - Hollow Flight Auger PT - Push Tubing	U - undisturbed tube sample D - disturbed sample CS - core sample		

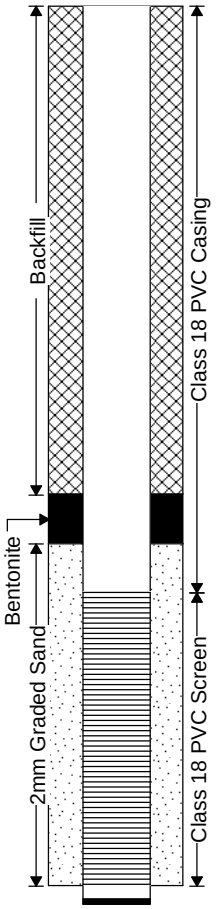
Borehole No.: BH03/MW03 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 10.5 m
Eastings: -
Northings: -
Date: 21/2/11

Driller and Co.: NUMAC Drilling
Drill Method: SFA
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	
0.0		Ground Surface					
		FILL Silty clay: brown to dark brown, heterogeneous, dry, soft, non plastic, with inclusions of fine to coarse shale gravels, concrete and plastic	0-0.1	D			
			0.3-0.5	D			
			0.5-0.7	D			
1.0			1.0-1.2	D			
		NATURAL Silty clay: dark to medium brown, with black and red mottles. heterogeneous, dry,very stiff, low plasticity					
2.0							
		NATURAL Shale: light brown to dark brown, dry, non plastic, coarse gravels, heterogeneous	2.5-2.7	D			
3.0							
		NATURAL Shale: light brown to dark brown, increased moisture, non plastic, coarse gravels, heterogeneous					
4.0							
		NATURAL Shale: grey increased moisture, moderate plasticity, coarse gravels, heterogeneous					
5.0							
6.0							
7.0							
8.0		**NATURAL** Shale: grey increased moisture, moderate plasticity, homogeneous					
9.0							
10.0		End of hole at 10.5 m, program depth					



Sample Method	Sample Condition		
HA - Hand Auger SFA - Solid Flight Auger HFA - Hollow Flight Auger PT - Push Tubing	U - undisturbed tube sample D - disturbed sample CS - core sample		

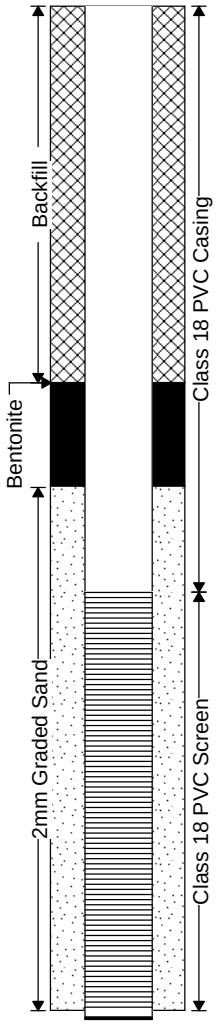
Borehole No.: BH04/MW04 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 9.6 m
Eastings: -
Northings: -
Date: 21/2/11

Driller and Co.: NUMAC Drilling
Drill Method: SFA
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				Well Completion Details
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	
0.0		Ground Surface					
		CONCRETE	0.2-0.3	D			
		FILL Silty clay: light to medium brown, heterogeneous, dry, soft, non plastic, inclusions of shale fragments and igneous gravels, from coarse gravels to cobbles	0.5-0.7	D			
1.0							
2.0		**NATURAL** Silty clay: light to medium brown, heterogeneous, dry, soft, non plastic ,less inclusions of shale fragments and igneous gravels	2.2-2.4	D			
3.0							
4.0		**NATURAL** Silty clay: dark brown and grey, heterogeneous, dry, soft, non plastic, inclusions of coarse gravels to pebbles of shale fragments and igneous rock	3.9-4.5	D			
5.0		**NATURAL** Silty clay: grey, heterogeneous, moist, soft, non plastic, inclusions of shale fragments and igneous gravels					
6.0							
7.0		**NATURAL** Silty clay: very dark grey, heterogeneous, wet, soft, non plastic, inclusions of shale fragments and igneous gravels, coarse to pebbles	7.2-7.5	D			
8.0							
9.0							
			9.5-9.6	D			
10.0		End of hole at 9.6 m, program depth					



Sample Method HA	***Sample Condition***		
HA - Hand Auger	***U - undisturbed tube sample***		
SFA - Solid Flight Auger	***D - disturbed sample***		
HFA - Hollow Flight Auger	***CS - core sample***		
PT - Push Tubing			

Borehole No.: BH05 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.7 m
Eastings: -
Northings: -
Date: 21/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		BITUMEN					
		FILL Silty clay: light brown, grey to white, dry, heterogeneous, soft, non plastic, with inclusions of coarse igneous gravels	0.15-0.25	D			
		NATURAL Silty clay: brown, grey and white, dry, soft, non plastic, less igneous gravel intrusions	0.25-0.5	D			
		End of hole at 0.7 m, program depth					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: BH16 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 1.0 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
		Ground Surface					
0.0		**CONCRETE**					
		NATURAL Silty clay: light brown, dry, soft, non plastic, with inclusions of medium loose fine shale gravels	0.2-0.3				
		NATURAL Silty clay: light brown, dry, soft, non plastic, with inclusions of medium loose fine shale gravels					
		NATURAL Silty clay: dark brown, dry, soft, non plastic, with inclusions of medium loose fine shale gravels	0.6-0.8				
1.0		End of hole at 1.0 m, program depth					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA06 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.9 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Nathan Cussen
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Silty clay: dark brown, heterogeneous, damp, firm, low to moderate plasticity with inclusions of wooden mulch chips, shale gravels and plastic	0.0-0.1	D			
			0.3-0.4	D			
		NATURAL Silty clay: mottled grey and orange heterogeneous, damp, firm, moderate plasticity with inclusions of shale gravels	0.6-0.7	D			
		End of hole at 0.9 m, program depth					
1.0							

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA07 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.9 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Crushed shale surface, yellow to white, dry, stiff, non plastic, loose, cobbles to gravel	0.-0.1	D			
		FILL Silty clay: light brown, heterogeneous, dry, firm, non plastic, with inclusions of loose, coarse to fine shale gravels and sandstone	0.2-0.3	D			
		FILL Silty clay: light brown, heterogeneous, dry, firm, non plastic,with inclusions of loose, coarse to fine shale gravels and sandstone					
		FILL Silty clay: light brown, heterogeneous, dry, firm, non plastic, inclusions of loose, coarse to fine shale gravels and increased presence of sandstone	0.5-0.6	D			
		FILL Silty clay: light brown, heterogeneous, dry, firm, non plastic,inclusions of loose, coarse to fine shale gravels with presence of large cobbles to boulders of sandstone	0.8-0.9	D			
		End of hole at 0.9 m, refusal at sandstone boulders					
1.0							

Sample Method	Sample Condition		
HA - Hand Auger SFA - Solid Flight Auger HFA - Hollow Flight Auger PT - Push Tubing	U - undisturbed tube sample D - disturbed sample CS - core sample		

Borehole No.: HA08 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 1.5 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Nathan Cussen
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Silty clay: brown, heterogeneous, dry, firm, non plastic with inclusions of igneous gravels, concrete, plant material and plastic	0.0-0.1	D		QA2/QC2	
			0.3-0.4	D			
			0.5-0.6	D			
1.0			1.0-1.1	D			
		NATURAL Silty clay: mottled orange and brown, heterogeneous, damp, firm to stiff, low plasticity with inclusions of shale gravels					
		End of hole at 1.5 m, program depth					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA09 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.8 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Nathan Cussen
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Silty clay: dary brown, heterogeneous, damp, firm, low to moderate plasticity with inclusions of wooden mulch chips, plastic, shale and igneous gravels	0.0-0.1	D			
			0.3-0.4	D			
		NATURAL Silty clay: mottled grey, orange, heterogeneous, damp, firm, moderate plasticity with inclusions of shale gravels					
		End of hole at 0.8 m, refusal on sandstone gravels					
1.0							

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA10 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.8 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Nathan Cussen
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Silty sand, brown, heterogeneous, dry, loose, fined grained, poorly sorted with inclusions of igneous and shale gravels, concrete, and terracotta fragments	0.0-0.1	D			
			0.3-0.4	D			
		FILL Crushed sandstone, dull brown, fine grained	0.6-0.7	D			
		End of holr at 0.8 m, refusal on sandstone gravels					
1.0							

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA11 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 1.3 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		RIVER PEBBLES	0-0.1	D			
		FILL Silty sand: dark brown, heterogeneous, damp, loose to medium density, fine grained, poorly sorted, inclusions of shale and igneous gravels					
		FILL Silty sand: yellow and lighter brown, heterogeneous, damp, loose to medium density, fine grained, inclusions of shale, igneous gravels and sandstone	0.3-0.4	D			
		FILL Silty sand: yellow and lighter brown, heterogeneous, damp, loose to mediumdensity, fine grained, inclusions of shale, igneous gravels and sandstone	0.5-0.6	D			
		FILL Silty sand: yellow and lighter brown, heterogeneous, damp, loose to medium density, fine grained, inclusions of shale, igneous gravels and sandstone	0.7-0.8	D			
		FILL Silty sand: trace clays, inclusions of shale, igneous gravel, sandstone, and plastics	0.8-0.9	D			
1.0		**FILL** Sandy clay: brown with orange, grey and yellow mottles, heterogeneous, damp, moderate to stiff, moderate plasticity, inclusions of igneous and shale gravels and terracotta					
		End of hole at 1.3 m, refusal on shale					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA12 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 1.0m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Sandy silt: heterogeneous, damp, dark brown, firm, non plastic with inclusions of plant material and woodern mulch chips	0-0.1	D			
		FILL Silty clay: brown with orange and red mottles, heterogeneous, damp, firm, low to moderate plasticity with inclusions of igneous and shale gravels, concrete and sandstone inclusions	0.3-0.4	D			
		FILL Silty clay: brown with orange and red mottles, heterogeneous, damp, firm, low to moderate plasticity with inclusions of igneous and shale gravels, concrete and sandstone inclusions, increase in moisture levels	0.5-0.6	D			
		NATURAL Silty clay, mottled orange and brown, heterogeneous, stiff, moderate plasticity, inclusions of shale gravels	0.7-0.8	D			
		NATURAL Silty clay: light brown, heterogeneous, dry, firm, non plastic,inclusions of loose, coarse to fine shale gravels with presence of large cobbles to boulders of sandstone					
1.0		End of hole at 1.0m, program depth					

Sample Method	Sample Condition		
HA - Hand Auger SFA - Solid Flight Auger HFA - Hollow Flight Auger PT - Push Tubing	U - undisturbed tube sample D - disturbed sample CS - core sample		

Borehole No.: HA 13 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.3 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Topsoil: organic plant material, dark brown, heterogeneous, dry, soft, non plastic, loose	0.0-0.1	D			
		FILL Silty clay: light to medium brown, heterogeneous, dry, soft, non plastic, inclusions of igneous rocks, concrete material and fragments of terracotta pipes	0.2-0.3	D			
		End of holr at 0.3 m, refusal on concrete					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA14 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 1.3 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Nathan Cussen
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Silty sand: brown, heterogeneous, dry, loose, fine grained, poorly sorted with inclusions of shale gravels, concrete, plastic, and metal	0.0-0.1	D			
		FILL Silty clay: brown, heterogeneous, dry, loose to firm, non plastic with inclusions of igneous gravels, shale gravels, plastic and concrete	0.3-0.4	D			
			0.5-0.6	D			
1.0			1.0-1.1	D			
		End of holr at 1.2 m, refusal on shale bed rock					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA15 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.8 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Nathan Cussen
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Silty clay:brown, heterogeneous, dry, loose to firm, non plastic with inclusions of igneous and shale gravels, glass and plastic	0.0-0.1	D		QA1/QC1	
			0.3-0.4	D			
		SILTY CLAY Silty clay: brown, heterogeneous, dry to damp, firm, low plasticity with inclusions of shale gravels	0.5-0.6	D			
		SHALE Brown, dry.					
		End of hole at 0.8 m, program depth					
1.0							

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA17 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 0.5 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Topsoil: organic garden material, silty sandy dark brown, heterogeneous, dry, soft, non plastic, loose, coarse to fine gravel	0.0-0.1	D			
		FILL Silty clay: light brown, heterogeneous, dry, firm, inclusions of fine to coarse shale gravels					
			0.2-0.3	D			
		FILL Silty clay: light brown, heterogeneous, dry, firm, shale inclusions, fine to coarse gravels					
			0.4-0.5	D			
		End of hole at 0.5 m, refulsal at shale gravels (not bedrock)					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Borehole No.: HA18 **Location:** 37 Glouster Rd, Hurstville

Project: Hurstville Private Hospital
Project No.: 41486
Client: Continuum Healthcare Group
Project Manager: Danielle Ord

Total Hole Depth: 1.3 m
Eastings: -
Northings: -
Date: 22/2/11

Driller and Co.: JBS
Drill Method: Hand Auger
Log By: Claudia Roberts
Bore Diameter: 100 mm

SUBSURFACE PROFILE			SAMPLE				
Depth	Visual	Description	Number	Condition	PID (ppm)	Observations	Well Completion Details
0.0		Ground Surface					
		FILL Silty clay: brown, heterogeneous, dry, firm, non plastic with inclusions of concrete, shale and igneous gravels	0.0-0.1	D			
			0.3-0.4	D			
			0.5-0.6	D			
1.0		**NATURAL** Silty clay: mottled orange and brown, heterogeneous, dry, low plasticity with inclusions of shale gravels					
		End of hole at 1.3 m, program depth					

Sample Method HA	***Sample Condition***		
HA - Hand Auger ***SFA - Solid Flight Auger*** ***HFA - Hollow Flight Auger*** ***PT - Push Tubing***	***U - undisturbed tube sample*** ***D - disturbed sample*** ***CS - core sample***		

Appendix C

UCL 95% Statistical Datasheets

Normal UCL Statistics for Full Data Sets

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%

Lead

Number of Valid Observations	18
Number of Distinct Observations	17
Minimum	8
Maximum	480
Mean	93
Median	36
SD	139
Variance	19309
Coefficient of Variation	1.494
Skewness	2.29
Shapiro Wilk Test Statistic	0.613
5% Shapiro Wilk Critical Value	0.897

Data not Normal at 5% Significance Level

95% UCL (Assuming Normal Distribution)

Student's-t UCL	150

Data appear Lognormal (0.05)

May want to try Lognormal UCLs

Normal UCL Statistics for Full Data Sets

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%

BaP

Number of Valid Observations	10
Number of Distinct Observations	5
Minimum	0.05
Maximum	2.3
Mean	0.43
Median	0.2
SD	0.692
Variance	0.479
Coefficient of Variation	1.61
Skewness	2.641
Shapiro Wilk Test Statistic	0.609
5% Shapiro Wilk Critical Value	0.842

Data not Normal at 5% Significance Level

95% UCL (Assuming Normal Distribution)

Student's-t UCL	0.831

Data appear Gamma Distributed (0.05)

May want to try Gamma UCLs

	Normal UCL Statistics for Full Data Sets
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%

PAHs

Number of Valid Observations	10
Number of Distinct Observations	7
Minimum	1.55
Maximum	27.6
Mean	5.505
Median	2.425
SD	8.058
Variance	64.93
Coefficient of Variation	1.464
Skewness	2.782
Shapiro Wilk Test Statistic	0.562
5% Shapiro Wilk Critical Value	0.842

Data not Normal at 5% Significance Level

95% UCL (Assuming Normal Distribution)

Student's-t UCL	10.18

Data do not follow a Discernable Distribution (0.05)

May want to try Nonparametric UCLs

Appendix D

GME Field Documentation

Field Equipment Calibration and Decontamination

JBS ENVIRONMENTAL

PROJECT NAME: Hurstville Private Hospital	**PROJECT NO:** 41486
FIELD DATES: 4/3/11	**FIELD STAFF:** C. Roberts, N. Cussen.

CALIBRATION SUMMARY	—
EQUIPMENT:	—
CALIBRATION STANDARD:	—

DATE	TIME	READING (ppm_v)	COMMENTS

DECONTAMINATION SUMMARY

EQUIPMENT: dip ~~probe~~ metre, disposable tubing, Nitrile gloves, WQM, PP,

1. Was the equipment decontaminated appropriately prior to sampling at each location?	(Y)	N	NA
2. Was excess soil removed by scraping, brushing or wiping with disposable towels?	(Y)	N	(NA)
3. Was the equipment contaminated with grease, tar or similar material? If so, was the equipment steam cleaned or rinsed with pesticide-grade acetone:hexane?	Y Y	N N	(NA)
4. Was phosphate-free detergent used to wash the equipment?	(Y)	N	NA
5. Was the equipment rinsed with clean water?	(Y)	N	NA
6. Was the equipment then rinsed with deionised water?	(Y)	N	NA
7. Were all sample containers cleaned and acid or solvent washed prior to sample collection?	(Y)	N	NA

WERE ANY ADDITIONAL DECONTAMINATION MEASURES REQUIRED? PROVIDE DETAILS.

JBS ENVIRONMENTAL

Daily Field Report

Date: 4/3/11
Arrival Time 9 AM
Depart Time 2 PM
Site Address Gloucester Rd, Hurstville.

Completed by C. Roberts, N. Cussen
Weather Fine
Subcontractor(s) —

Purpose of Visit Investigation + Sampling of 4 MW within Site.

Notes
(include sketch or attach site map/plan)

- Arrive Site 9am
- Review JRAS, updated Safety documentation / conducted toolbox talk.
- Sign in at hospital reception.
- Set up PP with each Ground water MW collect Samples for each, as per SAQP
- QA1 / QC1 taken at MW04
- after Sampling dispose of rubbish appropriately, and close MW.
- GPS readings taken for each MW as well as all BH & HA on site (as per updated site map.)
- Sign out at hospital reception.
- left Site 2 pm.

Associated Completed Forms
(eg, bore logs, PID/XRF calibration forms)

4x Ground water Sampling forms
decon

PO Box 940, Mascot NSW 1460 • Phone: 8338 1013 • Fax: 8338 1700 • E-mail: jbs@jbsgroup.com.au

Groundwater Sampling Form

JBS ENVIRONMENTAL

FIELD RECORD SHEETS

Project name: Hurstville Private	**Location:** Hurstville	**Well ID:** MW01/BH01
Person sampling: Claudia	**Sample method:** PP	**Date:** 4/3/11 **Weather:** fine
Pre-purging groundwater depth (m): 1.664	**Post-sampling groundwater depth (m):** 3.421	**Total well depth (m):** 9.236
Well diameter (mm): — **Well volume (L):**	**Pump on time:** 11:19 **Pump off time:** 11 48	**Cycles per minute:** —

Field Measurements

Time	Depth ~~Purge~~ Rate (mL/min)	Volume purged (L)	DO (mg/L)	DO (% saturation)	EC (us/cm)	pH (units)	Redox (mV)	Temp (oC)	TDS ppm
Field Stabilisation Criteria [1]:			+/- 10%		+/- 3%	+/- 0.5	+/- 10 mV		+/- 3%
11:15	2.248	1 L	4.5	54.4	1914	5.04	117	22.8	1069
11:20	2.459	2 L	3.5	34.1	1986	4.95	143	22.5	1045
11:25	2.645	3L	2.40	29.2	1871	4.83	155	22.1	1037
11:30	2.886	4L	2.17	25.1	1872	4.86	177	22.0	1038
11:33	3.011	4.5L	2.20	23.6	1867	4.86	176	22.0	1030
11:35	3.211	5L	2.19	23.4	1857	4.86	177	22.0	1040

Comments (Odour, colour, turbidity, sheen etc)

No odour clear to brown, slightly turbid, slight sheen

Were Metals Field Filtered? YES

Were QA/QC Samples Collected? NO

[1] These parameters may be considered stable when three consecutive readings (obtained several minutes apart) are within these levels.

Source "Victorian Environmental Protection Authority, *Groundwater Sampling Guidelines*, Publication 669, April 2000".

33° 57. 733 S

151° 05. 711 E

Groundwater Sampling Form

JBS ENVIRONMENTAL

FIELD RECORD SHEETS

Project name: Hurstville Private	**Location:** Hurstville	**Well ID:** BH02/MW02
Person sampling: Claudia	**Sample method:** PP	**Date:** 4/3/11 **Weather:** fine
Pre-purging groundwater depth (m): 2.509 m	**Post-sampling groundwater depth (m):** 5.564m	**Total well depth (m):** 10.201 m
Well diameter (mm): — **Well volume (L):**	**Pump on time:** 12:13 pm **Pump off time:** 12:41pm	**Cycles per minute:** —

Field Measurements

Time	~~Purge~~ Depth Rate (mL/min)	Volume purged (L)	DO (mg/L)	DO (% saturation)	EC (us/cm)	pH (units)	Redox (mV)	Temp (oC)	TDS ppm
Field Stabilisation Criteria [1]:			**+/- 10%**		**+/- 3%**	**+/- 0.5**	**+/- 10 mV**		**+/- 3%**
12:15	3.299	1L	3.25	36.0	854	4.63	241	21.6	460
12:20	3.876	2L	2.71	31.3	852	4.72	278	21.0	458
12:24	4.465	3L	2.47	27.4	864	4.95	285	20.9	463
12:27	4.869	4L	2.34	26.1	868	4.90	293	20.9	469
12:30	5.012	5L	2.39	26.3	867	4.90	290	20.9	467

Comments (Odour, colour, turbidity, sheen etc)

No odour, Clear, non turbid, no sheen.

Were Metals Field Filtered? YES

Were QA/QC Samples Collected? NO

[1] These parameters may be considered stable when three consecutive readings (obtained several minutes apart) are within these levels.

Source "Victorian Environmental Protection Authority, *Groundwater Sampling Guidelines*, Publication 669, April 2000".

IMSO Forms010 - Groundwater Sampling

33° 57. 718 S
151° 05. 757 E

Groundwater Sampling Form

JBS ENVIRONMENTAL

FIELD RECORD SHEETS

Project name: Hurstville Private	**Location:** Hurstville	**Well ID:** BH03/MW03
Person sampling: Claudia.	**Sample method:** pp	**Date:** 4/3/11 **Weather:** Fine
Pre-purging groundwater depth (m): 3.437m	**Post-sampling groundwater depth (m):**	**Total well depth (m):** 10.012
Well diameter (mm): **Well volume (L):** —	**Pump on time:** 1:03pm **Pump off time:**	**Cycles per minute:** —

Field Measurements

Time	Purge Rate (mL/min)	Volume purged (L)	DO (mg/L)	DO (% saturation)	EC (us/cm)	pH (units)	Redox (mV)	Temp (oC)	TDS ppm
Field Stabilisation Criteria [1]:			+/- 10%		+/- 3%	+/- 0.5	+/- 10 mV		+/- 3%
1:07 1:07	4.166	1L	2.01	22.6	2.58	7.74	116	22.8	1.44 ppk
1:12 1:12	4.196	2L	3.27	22.5	2.61 MS	5.35	104	22.1	1.47 ppk
1:16	4.203	3L	1.35	17.0	2.62	4.8	125	22.0	1.47 ppk
1:22	5.464	4L	1.00	11.4	2.66	4.8	131	22.0	1.50 ppk
1:26	5.652	5L	0.92	9.5	2.70	4.9	132	22.0	1.51 ppk
1:30	5.743	5.5L	0.91	9.9	2.68	4.9	132	22.0	1.50 ppk
1:33	6.241	6.0L	0.92	9.4	2.66	4.9	133	22.0	1.50 ppk

Comments (Odour, colour, turbidity, sheen etc)

No odour, brown, very turbid, no sheen

Were Metals Field Filtered? YES

Were QA/QC Samples Collected? NO

[1] These parameters may be considered stable when three consecutive readings (obtained several minutes apart) are within these levels.

Source "Victorian Environmental Protection Authority, *Groundwater Sampling Guidelines*, Publication 669, April 2000".

33° 57. 748 (S)
151° 05. 786 (E)

Groundwater Sampling Form

JBS ENVIRONMENTAL

FIELD RECORD SHEETS

Project name: Hurstville Private	**Location:** Glouster Rd Hurstville	**Well ID:** BH04/MW04
Person sampling: Claudia Roberts	**Sample method:** PP	**Date:** 4/3/11 **Weather:** Fine
Pre-purging groundwater depth (m): 0.925m	**Post-sampling groundwater depth (m):** 5.056 approx m	**Total well depth (m):** 9.284 m
Well diameter (mm): — **Well volume (L):**	**Pump on time:** 945 **Pump off time:** 10:35	**Cycles per minute:** —

Field Measurements

Time	~~Purge~~ Volume Time Depth Rate (mL/min)	Volume purged (L)	DO (mg/L)	DO (% saturation)	EC (us/cm)	pH (units)	Redox (mV)	Temp (oC)	TDS ppm
Field Stabilisation Criteria [1]:			+/- 10%		+/- 3%	+/- 0.5	+/- 10 mV		+/- 3%
9.45	1.645	1L	0.91	10.0	3.53	5.78	155	24.1	2.00 ppk
9.50	2.053	2L	0.52	6.7	3.52	5.77	142	24.4	1.99 ppk
9.55	2.405	3L	0.49	5.5	3.53	5.79	134	24.4	2.00 ppk
9.59	2.713	4L	0.48	5.3	3.55	5.77	130	24.4	2.00 ppk
10.05	2.605	5L	0.50	5.2	3.49	5.78	130	24.4	2.00 ppk

Comments (Odour, colour, turbidity, sheen etc)

No Odour, clear, non turbid, no sheen.

Were Metals Field Filtered? YES

Were QA/QC Samples Collected? YES MW04/QA1/QC1

[1] These parameters may be considered stable when three consecutive readings (obtained several minutes apart) are within these levels.

Source "Victorian Environmental Protection Authority, *Groundwater Sampling Guidelines*, Publication 669, April 2000".

S 33° 57.784'
E 151° 05.738'

JBS ENVIRONMENTAL

CLIENT/SITE: Hurstville Private Hospital	DATE: 4.3.11
PARTICIPANTS: NC & CR	PAGE: 1 OF: 1

Waypoints

BH01/MW01 : Recorded on the log

BH02/MW02 : ↓

BH03/MW03 : 33° 57.748' (S) 151° 05.786' (E)

BH04/MW04 : Recorded on the log

BH05 : 33° 57.735' (S) 151° 05.713 (E)

HA06 : 33° 57.723' (S) 151° 05.721' (E)

HA07 : 33° 57.749' (S) 151° 05.743' (E)

HA08 : 33° 57.716' (S) 151° 05.750' (E)

HA09 : 33° 57.730' (S) 151° 05.723' (E)

HA10 : 33° 57.740' (S) 151° 05.728' (E)

HA11 : No Coverage

HA12 : No Coverage

HA13 : 33° 57.727' (S) 151° 05.762' (E)

HA14 : 33° 57.760' (S) 151° 05.726' (E)

HA15 : 33° 57.750' (S) 151° 05.758' (E)

BH16 : 33° 57.743' (S) 151° 05.770' (E)

HA17 : 33° 57.758' (S) 151° 05.765' (E)

HA18 : 33° 57.744' (S) 151° 05.779' (E)

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Appendix E

Laboratory Reports and Chain of Custody Documentation

CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 41486
PROJECT NAME Hurstville
SEND REPORT TO: D Ory N Cussen — SEND INVOICE TO: A Worth
DATE NEEDED BY: STD TAT

LABORATORY BATCH NO.
SAMPLERS N Cussen & C Roberts — dorle@jbsgroup.com.au
PHONE: 0431 401 022 — EMAIL: ncussen@jbsgroup.com.au
QC LEVEL: NEPM 1999 (✓)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Combo 6a	Asbestos	Metals	NOTES
1	BH01/MW01 0.2-0.4	soil	21.2.11		Bag + Jar + Ice		x			
2	0.8-1.0							x		
3	2.5-2.7									
4	4.5-4.7									
5	7.5-7.8									
6	9.0-9.3									
7	BH02/MW02 0.0-0.1						x			
8	0.3-0.5							x	x	
9	0.5-0.7									
10	1.0-1.2									
11	2.0-2.5									
12	9.8-10.0									
13	BH03/MW03 0.0-0.1						x			
14	0.3-0.5									
15	0.5-0.7									
16	1.0-1.2									
17	2.5-2.7									
18	F1	Freg			Bag			x		

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

Job No: 52147
Date received: 22/2/11
Time received: 6pm
Received by: MP
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: Nathan Cussen DATE: 22.2.11	CONSIGNMENT NOTE NO.	NAME: Morgan Philp DATE: 22/2/11	COOLER SEAL – Yes..... No..... Intact..... Broken.....
OF: JBS	TRANSPORT CO.	OF: ELS	COOLER TEMP..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No..... Intact..... Broken.....
OF:	TRANSPORT CO	OF:	COOLER TEMP..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 4486
PROJECT NAME: Heathville
SEND REPORT TO: D Ord N Cussen — SEND INVOICE TO: A Worth
DATE NEEDED BY: STD TAT

LABORATORY BATCH NO.
SAMPLERS: N Cussen & C Roberts — dord@jbsgroup.com.au
PHONE: 0431 601 022 — EMAIL: ncussen@jbsgroup.com.au
QC LEVEL: NEPM 1999 (✓)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Combo 6a	Combo 3a	Metals	TPH	PAH	Asbestos	NOTES
19	BH04/ MW04 0.2-0.3	Soil	22.2.11		Jar + Bag + Ice		x						
20	0.5-0.7	↓	↓		↓				x			x	
21	2.2-2.4												
22	3.9-4.5												
23	7.2-7.5												
24	9.8-10		↓										
25	BH05 0.15-0.25		21.2.11						x	x	x	x	
26	0.25-0.5		22.2.11										
27	HA06 0.0-0.1												
28	0.3-0.4												
29	0.6-0.7												
30	HA07 0.0-0.1							x					
31	0.2-0.3												
32	0.5-0.6												
33	0.8-0.9												
34	HA08 0.0-0.1							x					
35	0.3-0.4								x			x	
36	0.5-0.6	↓	↓		↓								

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: Nathan Cussen DATE: 22.2.11	CONSIGNMENT NOTE NO.	NAME: Morgan Philp DATE: 22/2/11	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS	TRANSPORT CO.	OF: ELS	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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Fax: (02) 8338-1700
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PO Box 940 MASCOT NSW 1460
www.jbsgroup.com.au

CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 44486
PROJECT NAME: Hurstville
SEND REPORT TO: D Ord N Cussen SEND INVOICE TO: A Worthy
DATE NEEDED BY: STD TAT
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

LABORATORY BATCH NO.
SAMPLERS N Cussen C Roberts dord@jbsgroup.com.au
PHONE: 0431 401 022 EMAIL: ncussen@jbsgroup.com.au
QC LEVEL: NEPM 1999 (✓)

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Combo 6	Asbestos	Metals	TPH	PAH	Asbestos	NOTES
37	HA08 1.0 - 1.1	Soil	22.2.11		Jar + Bag + Ice								
38	HA09 0.0 - 0.1						x						
39	0.3 - 0.4												
40	HA10 0.0 - 0.1								x	x	x	x	
41	0.3 - 0.4												
42	0.6 - 0.7												
43	HA11 0.0 - 0.1						x						
44	0.3 - 0.4								x			x	
45	0.5 - 0.6												
46	0.7 - 0.8												
47	0.8 - 0.9								x			x	
48	F2	Frag			Bag			x					
49	HA12 0.0 - 0.1	Soil			Jar + Bag + Ice								
50	0.3 - 0.4												
51	0.5 - 0.6												
52	0.7 - 0.8												
53	HA13 0.0 - 0.1								x			x	
54	0.2 - 0.3												

RELINQUISHED BY:
NAME: Nathan Cussen DATE: 22.2.11
OF: JBS
NAME: DATE:
OF:

METHOD OF SHIPMENT:
CONSIGNMENT NOTE NO.
TRANSPORT CO.
CONSIGNMENT NOTE NO.
TRANSPORT CO

RECEIVED BY:
NAME: DATE:
OF:
NAME: DATE:
OF:

FOR RECEIVING LAB USE ONLY:
COOLER SEAL - Yes..... No..... Intact..... Broken.....
COOLER TEMP..... deg C
COOLER SEAL - Yes..... No..... Intact..... Broken.....
COOLER TEMP..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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PO Box 940 MASCOT NSW 1460
www.jbsgroup.com.au

CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 41486
PROJECT NAME: Hurstville
SEND REPORT TO: D Ord N Cussen SEND INVOICE TO: A Wong
DATE NEEDED BY: STD TAT
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

LABORATORY BATCH NO.:
SAMPLERS: N Cussen C Roberts dord@jbsgroup.com.au
PHONE: 0421 401 022 EMAIL: ncussen@jbsgroup.com.au
QC LEVEL: NEPM 1999 (✓)

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	BTEX	Combo 3	Combo 6a	Combo 3a	NOTES
55	HA14 0.0 - 0.1	Soil	22.2.11		Jar + Bag + Ice						
56	0.2 - 0.4	↓	↓		↓						
57	0.5 - 0.6										
58	1.0 - 1.1										
59	HA15 0.0 - 0.1									x	
60	0.2 - 0.4										
61	0.5 - 0.6										
62	BH16 0.2 - 0.3										
63	0.6 - 0.8										
64	HA17 0.0 - 0.1										
65	0.2 - 0.3										
66	0.4 - 0.5										
67	QA1									x	
	QC1						Please send to SGS a Pickford a Rydalmere				
68	QA2										
69	QC2	↓			↓						
70	Trip Spike	Water			Vial		x				
71	Trip Blank	↓	↓		↓		x				

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: Nathan Cussen DATE: 22.2.11	CONSIGNMENT NOTE NO.	NAME: Morgan Philp DATE: 22/2/11	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS	TRANSPORT CO.	OF: ELS	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 41486	LABORATORY BATCH NO.
PROJECT NAME Hurstville	SAMPLERS N Cussen & C Roberts dcroberts@jbsgroup.com.au
SEND REPORT TO: D Cox N Cussen SEND INVOICE TO: A Worth	PHONE: 0431 401 022 EMAIL: ncussen@jbsgroup.com.au
DATE NEEDED BY: STD TAT	QC LEVEL: NEPM 1999 (✓
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:	

	SAMPLE ID	MATRIX	D A T E	TIME	TYPE & PRESERVATIVE	pH	NOTES
2	Rinsate	water	22.2.11		Bottles / Vials + Ice		
3	BH03 / MW03 (9.5-10)	S					
4	BH05 (0.5-0.7)	S	extra jars + bags				
5	HA18 (0.0-0.2)	S					
6	HA18 (0.3-0.4)	S					
7	HA18 (0.5-0.6)	S					
8	HA14 (0.2-0.3)	S	bag				

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: Nathan Cussen DATE: 22.2.11	CONSIGNMENT NOTE NO.	NAME: Morgan Philp DATE: 22/2/11	COOLER SEAL – Yes..... No..... Intact ..... Broken .....
OF: JBS	TRANSPORT CO.	OF: ELS	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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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 52147

Client:
JBS Environmental Pty Ltd
P.O. Box 940
MASCOT
NSW 1460

Attention: Danielle Ord / Nathan Cussen

Sample log in details:

Your Reference:	**41486, Hurstville**
No. of samples:	67 Soils, 2 Materials, 3 Waters
Date samples received / completed instructions received	22/02/11 / 22/02/11

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: / Issue Date:	1/03/11 / 1/03/11
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Nancy Zhang
Chemist

Rhian Morgan
Reporting Supervisor

Matt Mansfield
Approved Signatory

Jeremy Faircloth
Chemist

vTRH & BTEX in Soil						
Our Reference:	UNITS	52147-1	52147-7	52147-13	52147-19	52147-25
Your Reference	----------	BH01/MW01	BH02/MW02	BH03/MW03	BH04/MW04	BH05
Depth	----------	0.2-0.4	0.0-0.1	0.0-0.1	0.2-0.3	0.25
Date Sampled		21/02/2011	21/02/2011	21/02/2011	22/02/2011	21/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	[NA]
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	[NA]
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	[NA]
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	[NA]
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	[NA]
Surrogate aaa-Trifluorotoluene	%	86	83	101	101	89

vTRH & BTEX in Soil						
Our Reference:	UNITS	52147-30	52147-34	52147-38	52147-40	52147-43
Your Reference	----------	HA07	HA08	HA09	HA10	HA11
Depth	----------	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		22/02/2011	22/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	[NA]	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	[NA]	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	[NA]	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	[NA]	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	[NA]	<1.0
Surrogate aaa-Trifluorotoluene	%	105	104	101	100	96

vTRH & BTEX in Soil			
Our Reference:	UNITS	52147-59	52147-67
Your Reference	----------	HA15	QA1
Depth	----------	0.0-0.1	-
Date Sampled		22/02/2011	22/02/2011
Type of sample		Soil	Soil
Date extracted	-	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011
vTRH C_6 - C_9	mg/kg	<25	<25
Benzene	mg/kg	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	101	103

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	52147-1	52147-7	52147-13	52147-19	52147-25
Your Reference	----------	BH01/MW01	BH02/MW02	BH03/MW03	BH04/MW04	BH05
Depth	----------	0.2-0.4	0.0-0.1	0.0-0.1	0.2-0.3	0.25
Date Sampled		21/02/2011	21/02/2011	21/02/2011	22/02/2011	21/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	250	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	400	<100	<100	<100
Surrogate o-Terphenyl	%	93	94	90	89	90

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	52147-30	52147-34	52147-38	52147-40	52147-43
Your Reference	----------	HA07	HA08	HA09	HA10	HA11
Depth	----------	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		22/02/2011	22/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	90	90	88	87	91

sTRH in Soil (C10-C36)			
Our Reference:	UNITS	52147-59	52147-67
Your Reference	----------	HA15	QA1
Depth	----------	0.0-0.1	-
Date Sampled		22/02/2011	22/02/2011
Type of sample		Soil	Soil
Date extracted	-	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100
Surrogate o-Terphenyl	%	91	92

PAHs in Soil						
Our Reference:	UNITS	52147-1	52147-7	52147-13	52147-19	52147-25
Your Reference	----------	BH01/MW01	BH02/MW02	BH03/MW03	BH04/MW04	BH05
Depth	----------	0.2-0.4	0.0-0.1	0.0-0.1	0.2-0.3	0.25
Date Sampled		21/02/2011	21/02/2011	21/02/2011	22/02/2011	21/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	1.1	0.1	0.2	<0.1	1.0
Anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Fluoranthene	mg/kg	1.8	0.3	0.4	<0.1	1.5
Pyrene	mg/kg	1.6	0.3	0.4	<0.1	1.4
Benzo(a)anthracene	mg/kg	0.8	0.1	0.2	<0.1	0.7
Chrysene	mg/kg	0.7	0.1	0.1	<0.1	0.6
Benzo(b+k)fluoranthene	mg/kg	1.1	0.3	0.3	<0.2	1.0
Benzo(a)pyrene	mg/kg	0.6	0.2	0.2	<0.05	0.7
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	0.1	0.1	<0.1	0.4
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	0.1	0.1	<0.1	0.4
Surrogate p-Terphenyl-d_{14}	%	104	108	108	107	108

PAHs in Soil						
Our Reference:	UNITS	52147-30	52147-34	52147-38	52147-40	52147-43
Your Reference	----------	HA07	HA08	HA09	HA10	HA11
Depth	----------	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		22/02/2011	22/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.3	0.5	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.5	1.0	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.5	0.9	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	0.4	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.2	0.4	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	0.3	0.8	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.2	0.5	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	0.3	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	108	108	104	108	106

PAHs in Soil			
Our Reference:	UNITS	52147-59	52147-67
Your Reference	----------	HA15	QA1
Depth	----------	0.0-0.1	-
Date Sampled		22/02/2011	22/02/2011
Type of sample		Soil	Soil
Date extracted	-	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	0.6	0.6
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	0.3	0.2
Phenanthrene	mg/kg	3.7	3.2
Anthracene	mg/kg	0.7	0.5
Fluoranthene	mg/kg	5.3	4.5
Pyrene	mg/kg	4.7	4.0
Benzo(a)anthracene	mg/kg	2.1	1.8
Chrysene	mg/kg	2.1	1.7
Benzo(b+k)fluoranthene	mg/kg	3.5	3.0
Benzo(a)pyrene	mg/kg	2.3	1.9
Indeno(1,2,3-c,d)pyrene	mg/kg	1.4	1.2
Dibenzo(a,h)anthracene	mg/kg	0.3	0.2
Benzo(g,h,i)perylene	mg/kg	1.2	1.0
Surrogate p-Terphenyl-d_{14}	%	107	109

Organochlorine Pesticides in soil						
Our Reference:	UNITS	52147-1	52147-7	52147-13	52147-19	52147-38
Your Reference	----------	BH01/MW01	BH02/MW02	BH03/MW03	BH04/MW04	HA09
Depth	----------	0.2-0.4	0.0-0.1	0.0-0.1	0.2-0.3	0.0-0.1
Date Sampled		21/02/2011	21/02/2011	21/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
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	%	77	86	84	78	82

Organochlorine Pesticides in soil		
Our Reference:	UNITS	52147-43
Your Reference	----------	HA11
Depth	----------	0.0-0.1
Date Sampled		22/02/2011
Type of sample		Soil
Date extracted	-	23/02/2011
Date analysed	-	24/02/2011
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCLMX	%	75

Organophosphorus Pesticides						
Our Reference:	UNITS	52147-1	52147-7	52147-13	52147-19	52147-38
Your Reference	----------	BH01/MW01	BH02/MW02	BH03/MW03	BH04/MW04	HA09
Depth	----------	0.2-0.4	0.0-0.1	0.0-0.1	0.2-0.3	0.0-0.1
Date Sampled		21/02/2011	21/02/2011	21/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
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	%	77	86	84	78	82

Organophosphorus Pesticides		
Our Reference:	UNITS	52147-43
Your Reference	----------	HA11
Depth	----------	0.0-0.1
Date Sampled		22/02/2011
Type of sample		Soil
Date extracted	-	23/02/2011
Date analysed	-	24/02/2011
Diazinon	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Ethion	mg/kg	<0.1
Surrogate TCLMX	%	75

PCBs in Soil						
Our Reference:	UNITS	52147-1	52147-7	52147-13	52147-19	52147-38
Your Reference	----------	BH01/MW01	BH02/MW02	BH03/MW03	BH04/MW04	HA09
Depth	----------	0.2-0.4	0.0-0.1	0.0-0.1	0.2-0.3	0.0-0.1
Date Sampled		21/02/2011	21/02/2011	21/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	77	86	84	78	82

PCBs in Soil		
Our Reference:	UNITS	52147-43
Your Reference	----------	HA11
Depth	----------	0.0-0.1
Date Sampled		22/02/2011
Type of sample		Soil
Date extracted	-	23/02/2011
Date analysed	-	24/02/2011
Arochlor 1016	mg/kg	<0.1
Arochlor 1221*	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	75

Acid Extractable metals in soil						
Our Reference:	UNITS	52147-1	52147-7	52147-8	52147-13	52147-19
Your Reference	----------	BH01/MW01	BH02/MW02	BH02/MW02	BH03/MW03	BH04/MW04
Depth	----------	0.2-0.4	0.0-0.1	0.3-0.5	0.0-0.1	0.2-0.3
Date Sampled		21/02/2011	21/02/2011	21/02/2011	21/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Arsenic	mg/kg	<4	<4	<4	4	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	15	21	25	9	8
Copper	mg/kg	21	43	37	15	51
Lead	mg/kg	18	38	34	100	14
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Nickel	mg/kg	7	21	57	3	6
Zinc	mg/kg	34	100	59	49	49

Acid Extractable metals in soil						
Our Reference:	UNITS	52147-20	52147-25	52147-30	52147-34	52147-35
Your Reference	----------	BH04/MW04	BH05	HA07	HA08	HA08
Depth	----------	0.5-0.7	0.25	0.0-0.1	0.0-0.1	0.3-0.4
Date Sampled		22/02/2011	21/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Arsenic	mg/kg	16	6	74	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	8	17	3	12	18
Copper	mg/kg	49	52	2	18	20
Lead	mg/kg	40	110	18	26	33
Mercury	mg/kg	<0.1	0.1	0.2	<0.1	<0.1
Nickel	mg/kg	11	6	2	31	38
Zinc	mg/kg	44	180	35	49	51

Acid Extractable metals in soil						
Our Reference:	UNITS	52147-38	52147-40	52147-43	52147-44	52147-47
Your Reference	----------	HA09	HA10	HA11	HA11	HA11
Depth	----------	0.0-0.1	0.0-0.1	0.0-0.1	0.3-0.4	0.8-0.9
Date Sampled		22/02/2011	22/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Arsenic	mg/kg	13	<4	<4	5	8
Cadmium	mg/kg	0.9	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	23	6	5	11	31
Copper	mg/kg	63	6	19	12	23
Lead	mg/kg	430	8	21	69	480
Mercury	mg/kg	1	<0.1	<0.1	<0.1	0.3
Nickel	mg/kg	8	4	3	3	13
Zinc	mg/kg	630	25	160	59	180

Acid Extractable metals in soil				
Our Reference:	UNITS	52147-53	52147-59	52147-67
Your Reference	----------	HA13	HA15	QA1
Depth	----------	0.0-0.1	0.0-0.1	-
Date Sampled		22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil
Date digested	-	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	23/02/2011	23/02/2011	23/02/2011
Arsenic	mg/kg	<4	4	4
Cadmium	mg/kg	<0.5	<0.5	<0.5
Chromium	mg/kg	33	11	11
Copper	mg/kg	9	27	28
Lead	mg/kg	11	180	170
Mercury	mg/kg	<0.1	0.2	0.2
Nickel	mg/kg	6	5	5
Zinc	mg/kg	29	100	100

Moisture						
Our Reference:	UNITS	52147-1	52147-7	52147-8	52147-13	52147-19
Your Reference	----------	BH01/MW01	BH02/MW02	BH02/MW02	BH03/MW03	BH04/MW04
Depth	----------	0.2-0.4	0.0-0.1	0.3-0.5	0.0-0.1	0.2-0.3
Date Sampled		21/02/2011	21/02/2011	21/02/2011	21/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Moisture	%	18	48	21	10	11

Moisture						
Our Reference:	UNITS	52147-20	52147-25	52147-30	52147-34	52147-35
Your Reference	----------	BH04/MW04	BH05	HA07	HA08	HA08
Depth	----------	0.5-0.7	0.25	0.0-0.1	0.0-0.1	0.3-0.4
Date Sampled		22/02/2011	21/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Moisture	%	8.8	37	7.0	10	8.0

Moisture						
Our Reference:	UNITS	52147-38	52147-40	52147-43	52147-44	52147-47
Your Reference	----------	HA09	HA10	HA11	HA11	HA11
Depth	----------	0.0-0.1	0.0-0.1	0.0-0.1	0.3-0.4	0.8-0.9
Date Sampled		22/02/2011	22/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/02/2011	23/02/2011	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Moisture	%	24	5.6	12	15	21

Moisture				
Our Reference:	UNITS	52147-53	52147-59	52147-67
Your Reference	----------	HA13	HA15	QA1
Depth	----------	0.0-0.1	0.0-0.1	-
Date Sampled		22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil
Date prepared	-	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	24/02/2011	24/02/2011	24/02/2011
Moisture	%	9.8	9.5	7.6

Asbestos ID - soils						
Our Reference:	UNITS	52147-1	52147-2	52147-7	52147-8	52147-13
Your Reference	----------	BH01/MW01	BH01/MW01	BH02/MW02	BH02/MW02	BH03/MW03
Depth	----------	0.2-0.4	0.8-1.0	0.0-0.1	0.3-0.5	0.0-0.1
Date Sampled		21/02/2011	21/02/2011	21/02/2011	21/02/2011	21/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Sample Description	-	Approx 30g Soil & Rocks	Approx 25g Soil	Approx 40g Soil	Approx 40g Soil	Approx 25g 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	52147-19	52147-20	52147-25	52147-30	52147-34
Your Reference	----------	BH04/MW04	BH04/MW04	BH05	HA07	HA08
Depth	----------	0.2-0.3	0.5-0.7	0.25	0.0-0.1	0.0-0.1
Date Sampled		22/02/2011	22/02/2011	21/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Sample Description	-	Approx 30g Soil	approx 35g Soil	Approx 40g Soil	Approx 30g Soil	Approx 25g 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	52147-35	52147-38	52147-40	52147-43	52147-44
Your Reference	----------	HA08	HA09	HA10	HA11	HA11
Depth	----------	0.3-0.4	0.0-0.1	0.0-0.1	0.0-0.1	0.3-0.4
Date Sampled		22/02/2011	22/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Sample Description	-	Approx 25g Soil	Approx 25g Soil	Approx 30g Sandy Soil	Approx 25g Soil	Approx 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	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	52147-47	52147-53	52147-59	52147-67
Your Reference	----------	HA11	HA13	HA15	QA1
Depth	----------	0.8-0.9	0.0-0.1	0.0-0.1	-
Date Sampled		22/02/2011	22/02/2011	22/02/2011	22/02/2011
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	24/02/2011	24/02/2011	24/02/2011	24/02/2011
Sample Description	-	Approx 30g Soil	Approx 30g Sandy Soil	Approx 30g Soil & Organic Matter	Approx 40g Soil & Rocks
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
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Asbestos ID - materials			
Our Reference:	UNITS	52147-18	52147-48
Your Reference	----------	F1	F2
Depth	----------	-	-
Date Sampled		21/02/2011	22/02/2011
Type of sample		Material	Mateiral
Date analysed	-	24/02/2011	24/02/2011
Sample Description	-	65x65x4mm Fibre cement sheet	50x48x6mm Fibre cement sheet
Asbestos ID in materials	-	Chrysotile asbestos detected Amosite asbestos detected	No asbestos detected

vTRH & BTEX in Water				
Our Reference:	UNITS	52147-70	52147-71	52147-72
Your Reference	----------	Trip Spike	Trip Blank	Rinsate
Depth	----------	-	-	-
Date Sampled		22/02/2011	22/02/2011	22/02/2011
Type of sample		Water	Water	Water
Date extracted	-	23/02/2011	23/02/2011	23/02/2011
Date analysed	-	20/02/2011	20/02/2011	20/02/2011
TRHC$_6$ - C$_9$	µg/L	[NA]	<10	<10
Benzene	µg/L	96%	<1.0	<1.0
Toluene	µg/L	112%	<1.0	<1.0
Ethylbenzene	µg/L	98%	<1.0	<1.0
m+p-xylene	µg/L	98%	<2.0	<2.0
o-xylene	µg/L	98%	<1.0	<1.0
Surrogate Dibromofluoromethane	%	123	102	102
Surrogate toluene-d8	%	116	91	91
Surrogate 4-BFB	%	101	96	94

sTRH in Water (C10-C36)		
Our Reference:	UNITS	52147-72
Your Reference	----------	Rinsate
Depth	----------	-
Date Sampled		22/02/2011
Type of sample		Water
Date extracted	-	24/02/2011
Date analysed	-	25/02/2011
$TRHC_{10}$ - C_{14}	µg/L	<50
$TRHC_{15}$ - C_{28}	µg/L	<100
$TRHC_{29}$ - C_{36}	µg/L	<100
Surrogate o-Terphenyl	%	92

PAHs in Water		
Our Reference:	UNITS	52147-72
Your Reference	----------	Rinsate
Depth	----------	-
Date Sampled		22/02/2011
Type of sample		Water
Date extracted	-	24/02/2011
Date analysed	-	25/02/2011
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Surrogate p-Terphenyl-d_{14}	%	117

Metals in Water - Dissolved		
Our Reference:	UNITS	52147-72
Your Reference	----------	Rinsate
Depth	----------	-
Date Sampled		22/02/2011
Type of sample		Water
Date digested	-	24/02/2011
Date analysed	-	24/02/2011
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0004
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

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.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
AS4964-2004	Asbestos ID - Qualitative identification of asbestos type fibres in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques.

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
Date analysed	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
vTRH C_6 - C_9	mg/kg	25	GC.16	<25	52147-1	<25 || <25	LCS-3	99%
Benzene	mg/kg	0.5	GC.16	<0.5	52147-1	<0.5 || <0.5	LCS-3	102%
Toluene	mg/kg	0.5	GC.16	<0.5	52147-1	<0.5 || <0.5	LCS-3	90%
Ethylbenzene	mg/kg	1	GC.16	<1.0	52147-1	<1.0 || <1.0	LCS-3	95%
m+p-xylene	mg/kg	2	GC.16	<2.0	52147-1	<2.0 || <2.0	LCS-3	103%
o-Xylene	mg/kg	1	GC.16	<1.0	52147-1	<1.0 || <1.0	LCS-3	103%
Surrogate aaa-Trifluorotoluene	%		GC.16	102	52147-1	86 || 98 || RPD: 13	LCS-3	94%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
Date analysed	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
TRH C_{10} - C_{14}	mg/kg	50	GC.3	<50	52147-1	<50 || <50	LCS-3	95%
TRH C_{15} - C_{28}	mg/kg	100	GC.3	<100	52147-1	<100 || <100	LCS-3	97%
TRH C_{29} - C_{36}	mg/kg	100	GC.3	<100	52147-1	<100 || <100	LCS-3	85%
Surrogate o-Terphenyl	%		GC.3	91	52147-1	93 || 95 || RPD: 2	LCS-3	90%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
Date analysed	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	<0.1 || <0.1	LCS-3	110%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	<0.1 || <0.1	LCS-3	115%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	1.1 || 0.3 || RPD: 114	LCS-3	128%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	0.2 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	1.8 || 0.8 || RPD: 77	LCS-3	119%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	1.6 || 0.8 || RPD: 67	LCS-3	123%
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	0.8 || 0.3 || RPD: 91	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	0.7 || 0.3 || RPD: 80	LCS-3	122%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	52147-1	1.1 || 0.6 || RPD: 59	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	52147-1	0.6 || 0.4 || RPD: 40	LCS-3	114%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	0.4 || 0.2 || RPD: 67	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	52147-1	0.4 || 0.2 || RPD: 67	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		GC.12 subset	110	52147-1	104 || 107 || RPD: 3	LCS-3	107%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
Date analysed	-			24/02/2011	52147-1	24/02/2011 || 24/02/2011	LCS-3	24/02/2011
HCB	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	86%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	90%
Heptachlor	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	89%
delta-BHC	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	84%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	94%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	91%
Dieldrin	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	104%
Endrin	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	96%
pp-DDD	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	96%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	LCS-3	103%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	75	52147-1	77 || 89 || RPD: 14	LCS-3	77%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
Date analysed	-			24/02/2011	52147-1	24/02/2011 || 24/02/2011	LCS-3	24/02/2011
Diazinon	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	LCS-3	122%
Fenitrothion	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	LCS-3	130%
Bromophos-ethyl	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	GC.8	<0.1	52147-1	<0.1 || <0.1	LCS-3	126%
Surrogate TCLMX	%		GC.8	75	52147-1	77 || 89 || RPD: 14	LCS-3	76%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-3	23/02/2011
Date analysed	-			24/02/2011	52147-1	24/02/2011 || 24/02/2011	LCS-3	24/02/2011
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	GC-6	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	52147-1	<0.1 || <0.1	LCS-3	112%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	52147-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	75	52147-1	77 || 89 || RPD: 14	LCS-3	80%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-1	23/02/2011
Date analysed	-			23/02/2011	52147-1	23/02/2011 || 23/02/2011	LCS-1	23/02/2011
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	52147-1	<4 || <4	LCS-1	100%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	52147-1	<0.5 || <0.5	LCS-1	102%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	52147-1	15 || 10 || RPD: 40	LCS-1	104%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	52147-1	21 || 19 || RPD: 10	LCS-1	101%
Lead	mg/kg	1	Metals.20 ICP-AES	<1	52147-1	18 || 16 || RPD: 12	LCS-1	101%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ǁ Duplicate ǁ %RPD	Spike Sm#	Spike % Recovery
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	52147-1	<0.1 ǁ <0.1	LCS-1	104%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	52147-1	7 ǁ 8 ǁ RPD: 13	LCS-1	105%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	52147-1	34 ǁ 35 ǁ RPD: 3	LCS-1	104%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			23/02/2011
Date analysed	-			24/02/2011
Moisture	%	0.1	LAB.8	<0.10

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

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

QUALITY CONTROL vTRH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ǁ Duplicate ǁ %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/02/2011	[NT]	[NT]	LCS-W1	23/02/2011
Date analysed	-			23/02/2011	[NT]	[NT]	LCS-W1	23/02/2011
TRH C_6 - C_9	µg/L	10	GC.16	<10	[NT]	[NT]	LCS-W1	106%
Benzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	101%
Toluene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	116%
Ethylbenzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	104%
m+p-xylene	µg/L	2	GC.16	<2.0	[NT]	[NT]	LCS-W1	104%
o-xylene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	104%
Surrogate Dibromofluoromethane	%		GC.16	99	[NT]	[NT]	LCS-W1	119%
Surrogate toluene-d8	%		GC.16	90	[NT]	[NT]	LCS-W1	115%
Surrogate 4-BFB	%		GC.16	99	[NT]	[NT]	LCS-W1	100%

QUALITY CONTROL sTRH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/02/2011	[NT]	[NT]	LCS-W1	24/02/2011
Date analysed	-			25/02/2011	[NT]	[NT]	LCS-W1	25/02/2011
TRHC$_{10}$ - C$_{14}$	µg/L	50	GC.3	<50	[NT]	[NT]	LCS-W1	62%
TRHC$_{15}$ - C$_{28}$	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	65%
TRHC$_{29}$ - C$_{36}$	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	68%
Surrogate o-Terphenyl	%		GC.3	92	[NT]	[NT]	LCS-W1	70%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/02/2011	[NT]	[NT]	LCS-W1	24/02/2011
Date analysed	-			25/02/2011	[NT]	[NT]	LCS-W1	25/02/2011
Naphthalene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	84%
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	95%
Phenanthrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	103%
Anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	94%
Pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	106%
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	113%
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	91%
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	113	[NT]	[NT]	LCS-W1	104%

QUALITY CONTROL Metals in Water - Dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			24/02/2011	[NT]	[NT]	LCS-1	24/02/2011
Date analysed	-			24/02/2011	[NT]	[NT]	LCS-1	24/02/2011
Arsenic - Dissolved	mg/L	0.05	Metals.20 ICP-AES	<0.05	[NT]	[NT]	LCS-1	106%
Cadmium - Dissolved	mg/L	0.01	Metals.20 ICP-AES	<0.01	[NT]	[NT]	LCS-1	101%
Chromium - Dissolved	mg/L	0.01	Metals.20 ICP-AES	<0.01	[NT]	[NT]	LCS-1	102%
Copper - Dissolved	mg/L	0.01	Metals.20 ICP-AES	<0.01	[NT]	[NT]	LCS-1	103%
Lead - Dissolved	mg/L	0.03	Metals.20 ICP-AES	<0.03	[NT]	[NT]	LCS-1	99%
Mercury - Dissolved	mg/L	0.0004	Metals.21 CV-AAS	<0.0004	[NT]	[NT]	LCS-1	96%
Nickel - Dissolved	mg/L	0.02	Metals.20 ICP-AES	<0.02	[NT]	[NT]	LCS-1	103%
Zinc - Dissolved	mg/L	0.02	Metals.20 ICP-AES	<0.02	[NT]	[NT]	LCS-1	98%

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	52147-7	23/02/2011
Date analysed	-	[NT]	[NT]	52147-7	23/02/2011
vTRH C_6 - C_9	mg/kg	[NT]	[NT]	52147-7	79%
Benzene	mg/kg	[NT]	[NT]	52147-7	85%
Toluene	mg/kg	[NT]	[NT]	52147-7	80%
Ethylbenzene	mg/kg	[NT]	[NT]	52147-7	71%
m+p-xylene	mg/kg	[NT]	[NT]	52147-7	80%
o-Xylene	mg/kg	[NT]	[NT]	52147-7	80%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	52147-7	89%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	52147-7	23/02/2011
Date analysed	-	[NT]	[NT]	52147-7	23/02/2011
TRHC$_{10}$ - C$_{14}$	mg/kg	[NT]	[NT]	52147-7	98%
TRHC$_{15}$ - C$_{28}$	mg/kg	[NT]	[NT]	52147-7	139%
TRHC$_{29}$ - C$_{36}$	mg/kg	[NT]	[NT]	52147-7	92%
Surrogate o-Terphenyl	%	[NT]	[NT]	52147-7	91%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	52147-7	23/02/2011
Date analysed	-	[NT]	[NT]	52147-7	23/02/2011
Naphthalene	mg/kg	[NT]	[NT]	52147-7	114%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	52147-7	129%
Phenanthrene	mg/kg	[NT]	[NT]	52147-7	125%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	52147-7	122%
Pyrene	mg/kg	[NT]	[NT]	52147-7	125%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	52147-7	120%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	52147-7	113%
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]	52147-7	109%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	52147-7	23/02/2011
Date analysed	-	[NT]	[NT]	52147-7	24/02/2011
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	52147-7	96%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	52147-7	100%
Heptachlor	mg/kg	[NT]	[NT]	52147-7	99%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	52147-7	92%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	52147-7	66%
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]	52147-7	103%
Dieldrin	mg/kg	[NT]	[NT]	52147-7	120%
Endrin	mg/kg	[NT]	[NT]	52147-7	114%
pp-DDD	mg/kg	[NT]	[NT]	52147-7	114%
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]	52147-7	120%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	52147-7	85%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	52147-7	23/02/2011
Date analysed	-	[NT]	[NT]	52147-7	24/02/2011
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]	52147-7	121%
Fenitrothion	mg/kg	[NT]	[NT]	52147-7	135%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	52147-7	135%
Surrogate TCLMX	%	[NT]	[NT]	52147-7	81%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	52147-7	23/02/2011
Date analysed	-	[NT]	[NT]	52147-7	24/02/2011
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1221*	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]	52147-7	103%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	52147-7	84%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	52147-38	23/02/2011 || 23/02/2011	52147-7	23/01/2011
Date analysed	-	52147-38	23/02/2011 || 23/02/2011	52147-7	23/01/2011
Arsenic	mg/kg	52147-38	13 || 14 || RPD: 7	52147-7	121%
Cadmium	mg/kg	52147-38	0.9 || 0.6 || RPD: 40	52147-7	102%
Chromium	mg/kg	52147-38	23 || 19 || RPD: 19	52147-7	98%
Copper	mg/kg	52147-38	63 || 42 || RPD: 40	52147-7	115%
Lead	mg/kg	52147-38	430 || 380 || RPD: 12	52147-7	93%
Mercury	mg/kg	52147-38	1 || 0.9 || RPD: 11	52147-7	106%
Nickel	mg/kg	52147-38	8 || 6 || RPD: 29	52147-7	98%
Zinc	mg/kg	52147-38	630 || 510 || RPD: 21	52147-7	85%

Report Comments:

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

Asbestos ID was analysed by Approved Identifier: Paul Ching
Asbestos ID was authorised by Approved Signatory: Matt Mansfield

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

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 batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

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

SAMPLE RECEIPT ADVICE

Client:

JBS Environmental Pty Ltd
P.O. Box 940
MASCOT NSW 1460

ph: 8338 1013
Fax: 8338 1700

Attention: Danielle Ord / Nathan Cussen

Sample log in details:

Your reference:	**41486, Hurstville**
Envirolab Reference:	**52147**
Date received:	22/02/11
Date results expected to be reported:	**1/03/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	67 Soils, 2 Materials, 3 Waters
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Aileen Hie

From: Jacinta Hurst
Sent: Wednesday, 2 March 2011 10:16 AM
To: Aileen Hie
Subject: FW: additional analysis for 52147.

Envirolab Ref: 52147A
Due: 8/3/11
Std + 10

Regards,

Jacinta Hurst
Envirolab Services Pty Ltd
Ashley St Chatswood NSW 2067
T 02 9910 6200 F 02 9910 6201
D 02 9910 6220 M 0407 00 3037
jhurst@envirolabservices.com.au | www.envirolabservices.com.au

From: Danielle Ord [mailto:DOrd@jbsgroup.com.au]
Sent: Tuesday, 1 March 2011 01:00
To: Aileen Hie; Jacinta Hurst
Subject: additional analysis for 52147.

Aileen / Jacinta,

Can I please get some additional analysis (if possible and within holding times) for two samples which were submitted (and put on hold) with those reported on certificate 52147 (Envirolab ref), 41486 (JBS ref).

If I could please have:
60 HA15 (0.3-0.4 m) for PAH's;

39 and HA09 (0.3-0.4) for metals (standard 8 metals).

Please advise if this is not possible. Thanks

Danielle Ord
Environmental Hydrogeologist
JBS Environmental Pty Ltd
128 O'Riordan Street, Mascot, NSW, 2020
(ph) 02 8338 1011 (fax) 02 8338 1700
www.jbsgroup.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 52147-A

Client:
JBS Environmental Pty Ltd
P.O. Box 940
MASCOT
NSW 1460

Attention: Danielle Ord / Nathan Cussen

Sample log in details:

Your Reference:	**41486, Hurstville**
No. of samples:	Additional Testing on 2 Soils
Date samples received / completed instructions received	22/02/11 / 01/03/11

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: / Issue Date:	8/03/11 / 4/03/11
Date of Preliminary Report:	Not Issued

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Results Approved By:

Jacinta Hurst
Laboratory Manager

Rhian Morgan
Reporting Supervisor

PAHs in Soil		
Our Reference:	UNITS	52147-A-60
Your Reference	----------	HA15
Depth	----------	0.3-0.4
Date Sampled		22/02/2011
Type of sample		Soil
Date extracted	-	03/03/2011
Date analysed	-	03/03/2011
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.4
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.6
Pyrene	mg/kg	0.5
Benzo(a)anthracene	mg/kg	0.2
Chrysene	mg/kg	0.2
Benzo(b+k)fluoranthene	mg/kg	0.3
Benzo(a)pyrene	mg/kg	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1
Surrogate p-Terphenyl-d_{14}	%	126

Acid Extractable metals in soil		
Our Reference:	UNITS	52147-A-39
Your Reference	----------	HA09
Depth	----------	0.3-0.4
Date Sampled		22/02/2011
Type of sample		Soil
Date digested	-	03/03/2011
Date analysed	-	03/03/2011
Arsenic	mg/kg	5
Cadmium	mg/kg	<0.5
Chromium	mg/kg	17
Copper	mg/kg	8
Lead	mg/kg	44
Mercury	mg/kg	0.3
Nickel	mg/kg	4
Zinc	mg/kg	200

Moisture			
Our Reference:	UNITS	52147-A-39	52147-A-60
Your Reference	----------	HA09	HA15
Depth	----------	0.3-0.4	0.3-0.4
Date Sampled		22/02/2011	22/02/2011
Type of sample		Soil	Soil
Date prepared	-	3/03/2011	3/03/2011
Date analysed	-	4/03/2011	4/03/2011
Moisture	%	25	15

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.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.

Client Reference: 41486, Hurstville

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/03/2011	[NT]	[NT]	LCS-3	03/03/2011
Date analysed	-			03/03/2011	[NT]	[NT]	LCS-3	03/03/2011
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-3	93%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-3	95%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-3	107%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-3	100%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-3	105%
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-3	112%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	[NT]	[NT]	LCS-3	106%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	135	[NT]	[NT]	LCS-3	124%

Client Reference: 41486, Hurstville

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			03/03/2011	[NT]	[NT]	LCS-1	03/03/2011
Date analysed	-			03/03/2011	[NT]	[NT]	LCS-1	03/03/2011
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	[NT]	[NT]	LCS-1	95%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	[NT]	[NT]	LCS-1	94%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	[NT]	[NT]	LCS-1	94%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	[NT]	[NT]	LCS-1	95%
Lead	mg/kg	1	Metals.20 ICP-AES	<1	[NT]	[NT]	LCS-1	92%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	[NT]	[NT]	LCS-1	93%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	[NT]	[NT]	LCS-1	95%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	[NT]	[NT]	LCS-1	92%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			03/03/2011
Date analysed	-			04/03/2011
Moisture	%	0.1	LAB.8	<0.10

Report Comments:

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

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

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 batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

PICKFORD & RHYDER CONSULTING PTY LTD
ABN 17 105 546 076
Occupational Hygiene Measurements and Solutions.

PO Box 1422 Lane Cove 1595
Rear - 244 Burns Bay Road
Lane Cove NSW Australia
Phone: (02) 9418 9151
Fax: (02) 9418 9150

28 February 2011

Ms D. Ord & N. Cussen
JBS Environmental
PO Box 940
MASCOT NSW 1460

Fax: 8338-1700

CERTIFICATE OF ANALYSIS – ASBESTOS IDENTIFICATION

YOUR REFERENCE/JOB No.: 41486
TYPE OF SAMPLES: Bulk sample -as received from Envirolab Services
SITE LOCATION: Hurstville
DATE SAMPLED: 22 February 2011 **DATE RECEIVED:** 23 February 2011
OUR REFERENCE: 65731-ID

TEST METHOD: Soil samples examined by Stereomicroscopy and Polarized Light Microscopy (with Dispersion Staining) in accordance with AS 4964-2004: - 'Method for the qualitative identification of asbestos in bulk samples' as outlined in Laboratory Method ID/1. The Reporting Limit for the results in this Certificate is numerically equal to the lowest detection limit of 0.1 g/kg. Trace asbestos analysis has been conducted on each sample, which is generally designed to detect 'respirable' asbestos fibres (ie less than 3 micrometres in width) distributed throughout the sample.

All sampling and site work have been undertaken by the client - the analytical procedures and results reported on this Certificate have been conducted by Pickford & Rhyder Consulting.

Sample No	*Lab No*	*Sample Information*	*Analysis Result*	*Description*
QC1	65731	Soil sample as received	no asbestos detected	The sample was a brown soil with plant matter, of approximate weight 31 g, in which organic fibres were detected. No asbestos fibres were found at the Reporting Limit of 0.1 g/kg.

Analysed and reported by:

L. Apthorpe,
Approved Identifier and Signatory.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

Accreditation number 2515

CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 41486
PROJECT NAME: Hurstville
SEND REPORT TO: D Ord N Cooper SEND INVOICE TO: A Worth
DATE NEEDED BY: STD TAT

LABORATORY BATCH NO.
SAMPLERS: N Cooper C Roberts dord@jbsgroup.com.au
PHONE: 0431 401 022 EMAIL: ncooper@jbsgroup.com.au
QC LEVEL: NEPM 1999 (✓)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	D A T E	TIME	TYPE & PRESERVATIVE	pH	BTEX	Combo 3	Combo 6a	Combo 3a	NOTES
HA14 0.0 - 0.1	Soil	22.2.11		Jar + Bag + Ice						
0.2 - 0.4	↓	↓		↓						
0.5 - 0.6										
1.0 - 1.1										
HA15 0.0 - 0.1								x		
0.2 - 0.4										
0.5 - 0.6										
BH16 0.2 - 0.3										
0.6 - 0.8										
HA17 0.0 - 0.1										
0.2 - 0.3										
0.4 - 0.5										
QA1								x		
QC1										Please send to Sea & Pickford & Rhodes
QA2										
QC2										
Trip Spike	Water			Vial						
Trip Blank	↓	↓		↓						
						x	x			

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: Nathan Cooper DATE: 22.2.11	CONSIGNMENT NOTE NO.	NAME: Morgan Philp DATE: 22/2/11	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS	TRANSPORT CO.	OF: ELS	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: ELS	TRANSPORT CO	OF: P&R @ 2.20pm	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle, O = Other

JBS Environmental Pty Ltd ABN 67 071 842 638
Phone: (02) 8338-1011
Fax: (02) 8338-1700
Suite 2, 595 Gardeners Road MASCOT NSW 2020
PO Box 940 MASCOT NSW 1460
www.jbsgroup.com.au

COC 23/2/2011 @ 5:14pm.

CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 41497
PROJECT NAME: Hurstville
SEND REPORT TO: Dood + N Cussen SEND INVOICE TO: Amy Worth
DATE NEEDED BY: Std TAT
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

LABORATORY BATCH NO.:
SAMPLERS Nathan Cussen
PHONE: 83381011 EMAIL:
QC LEVEL: NEPM 1999 ( )

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TPH/Btex	PAH	8 Metals													NOTES
QC1	Soil	22/2/11		Jar		X	X	X													

SGS
Received 23/2/2011 AM.
4:11pm (Yes)
Temperature on Receipt 4°C.
Storage Location S-338
SGS JE E1900099

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: Danielle Dood DATE:	CONSIGNMENT NOTE NO.	NAME: Angela DATE: 23/2/11	COOLER SEAL – Yes ✓ No ..... Intact ✓ Broken .....
OF: JBS Env 22-2-11	TRANSPORT CO.	OF: SGS	COOLER TEMP 4 deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes ..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

JBS Environmental Pty Ltd ABN 67 071 842 638
Phone: (02) 8338-1011
Fax: (02) 8338-1700
Suite 2, 595 Gardeners Road MASCOT NSW 2020
PO Box 940 MASCOT NSW 1460
www.jbsgroup.com.au

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	Danielle Ord
Client	JBS Environmental
Address	Suite 2, 595 Gardeners Road Mascot Sydney NSW 2020
Telephone	02 8338 1011
Facsimile	02 8338 1700
Email	dord@jbsgroup.com.au
Project	**41497 - Hurstville**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE100099 R0
Report Number	0000000926
Date Reported	07 Mar 2011
Date Received	23 Feb 2011

COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong Liang
Inorganics Metals Team Leader

Jue Wang
Organic Chemist

Ly Kim Ha
Organics Supervisor

Parameter	Units	LOR	Sample Number SE100099.001 Sample Matrix Soil Sample Date 22 Feb 2011 Sample Name QC1
Volatile Petroleum Hydocarbons in Soil Method: AN433/AN434			
TRH C6-C9	mg/kg	20	<20
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
MtBE(Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
Surrogates			
Trifluorotoluene (Surrogate)	%	-	**83**
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403			
TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	50	<50
TRH C29-C36	mg/kg	50	<50
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420			
Naphthalene	mg/kg	0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.1	**0.7**
Acenaphthene	mg/kg	0.1	<0.1
Fluorene	mg/kg	0.1	**0.2**
Phenanthrene	mg/kg	0.1	**3.8**
Anthracene	mg/kg	0.1	**0.9**
Fluoranthene	mg/kg	0.1	**4.9**
Pyrene	mg/kg	0.1	**4.1**
Benzo(a)anthracene	mg/kg	0.1	**2.9**
Chrysene	mg/kg	0.1	**1.2**
Benzo(b&k)fluoranthene	mg/kg	0.2	**3.0**
Benzo(a)pyrene	mg/kg	0.1	**1.7**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**1.1**
Dibenzo(a&h)anthracene	mg/kg	0.1	**0.2**
Benzo(ghi)perylene	mg/kg	0.1	**1.2**
Total PAH	mg/kg	1.8	<1.8
Surrogates			
d5-nitrobenzene (Surrogate)	%	-	**111**
2-fluorobiphenyl (Surrogate)	%	-	**98**
d14-p-terphenyl (Surrogate)	%	-	**79**
Metals in Soil by ICPOES from EPA 200.8 Digest (SYDNEY) Method: AN040/AN320			
Arsenic, As	mg/kg	3	**4**
Cadmium, Cd	mg/kg	0.3	**0.3**
Chromium, Cr	mg/kg	0.3	**11**
Copper, Cu	mg/kg	0.5	**25**
Lead, Pb	mg/kg	1	**190**
Nickel, Ni	mg/kg	0.5	**4.8**
Zinc, Zn	mg/kg	0.5	**99**

Parameter	Units	LOR	Sample Number: SE100099.001 Sample Matrix: Soil Sample Date: 22 Feb 2011 Sample Name: QC1
Mercury in Soil Method: AN312			
Mercury	mg/kg	0.05	<0.05
Moisture Content Method: AN234			
% Moisture	%	0.5	**9.6**

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Mercury in Soil Method: ME-(AU)-[ENV]AN312

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB000505	mg/kg	0.05	<0.05	2%	108%	98%

Metals in Soil by ICPOES from EPA 200.8 Digest (SYDNEY) Method: ME-(AU)-[ENV]AN040/AN320

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB000504	mg/kg	3	<3	16%	96%	92%
Cadmium, Cd	LB000504	mg/kg	0.3	<0.3	10%	99%	92%
Chromium, Cr	LB000504	mg/kg	0.3	<0.3	18%	99%	93%
Copper, Cu	LB000504	mg/kg	0.5	<0.5	4%	101%	101%
Lead, Pb	LB000504	mg/kg	1	<1	13%	99%	64%
Nickel, Ni	LB000504	mg/kg	0.5	<0.5	9%	100%	93%
Zinc, Zn	LB000504	mg/kg	0.5	<0.5	4%	97%	119%

Moisture Content Method: ME-(AU)-[ENV]AN234

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB000487	%	0.5	16%

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB000485	mg/kg	0.1	<0.1	0%	99%	96%
2-methylnaphthalene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB000485	mg/kg	0.1	<0.1	0%	87%	94%
Acenaphthene	LB000485	mg/kg	0.1	<0.1	0%	93%	96%
Fluorene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB000485	mg/kg	0.1	<0.1	0%	88%	98%
Anthracene	LB000485	mg/kg	0.1	<0.1	0%	94%	95%
Fluoranthene	LB000485	mg/kg	0.1	<0.1	0%	91%	101%
Pyrene	LB000485	mg/kg	0.1	<0.1	0%	94%	105%
Benzo(a)anthracene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
Chrysene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(b&k)fluoranthene	LB000485	mg/kg	0.2	<0.2	0%	NA	NA
Benzo(a)pyrene	LB000485	mg/kg	0.1	<0.1	0%	83%	89%
Indeno(1,2,3-cd)pyrene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
Dibenzo(a&h)anthracene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB000485	mg/kg	0.1	<0.1	0%	NA	NA
Total PAH	LB000485	mg/kg	1.8	<1.8	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB000485	%	-	110%	2%	110%	100%
2-fluorobiphenyl (Surrogate)	LB000485	%	-	98%	4%	101%	91%
d14-p-terphenyl (Surrogate)	LB000485	%	-	81%	3%	83%	75%

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C10-C14	LB000485	mg/kg	20	<20	4%	90%	80%
TRH C15-C28	LB000485	mg/kg	50	<50	0%	103%	99%
TRH C29-C36	LB000485	mg/kg	50	<50	0%	79%	73%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Volatile Petroleum Hydocarbons in Soil **Method: ME-(AU)-[ENV]AN433/AN434**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C9	LB000486	mg/kg	20	<20	0%	121%	116%
Benzene	LB000486	mg/kg	0.1	<0.1	0%	103%	97%
Toluene	LB000486	mg/kg	0.1	<0.1	0%	104%	101%
Ethylbenzene	LB000486	mg/kg	0.1	<0.1	0%	105%	103%
m/p-xylene	LB000486	mg/kg	0.2	<0.2	0%	112%	110%
o-xylene	LB000486	mg/kg	0.1	<0.1	0%	115%	113%
MtBE(Methyl-tert-butyl ether)	LB000486	mg/kg	0.1	<0.1	0%	111%	105%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Trifluorotoluene (Surrogate)	LB000486	%	-	121%	13%	110%	96%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN045	A portion of sample is digested with Nitric acid and Hydrogen Peroxide over time and then with Hydrochloric acid through several heating and cooling cycles. It provides a strong oxidising medium for bringing metal analytes into solution according to USEPA3050, after filtration the solution is presented for analysis on AAS or ICP.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN234	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with diffential polarity of the elluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependant on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	This analysis is not covered by the scope of accreditation.
^	Performed by outside laboratory.
LOR	Limit of Reporting
↑↓	Raised or Lowered Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
-	The sample was not analysed for this analyte

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

SAMPLE RECEIPT ADVICE

SE100099

CLIENT DETAILS

Contact	Danielle Ord
Client	JBS Environmental
Address	Suite 2, 595 Gardeners Road Mascot Sydney NSW 2020
Telephone	02 8338 1011
Facsimile	02 8338 1700
Email	dord@jbsgroup.com.au
Project	**41497 - Hurstville**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 23/2/2011
Report Due	Thu 3/3/2011
SGS Reference	**SE100099**

SUBMISSION DETAILS

This is to confirm that 1 sample was received on Wednesday 23/2/2011. Results are expected to be ready by Thursday 3/3/2011. Please quote SGS reference SE100099 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	1 Soil	Type of documentation received	COC
Date documentation received	23/2/2011	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	Cool
Sample container provider	Other Lab	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

Instructions received at SGS 23/02/2011@5:14pm.

SAMPLE RECEIPT ADVICE

SE100099

CLIENT DETAILS

Client	JBS Environmental	Project	41497 - Hurstville

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Metals in Soil by ICPOES from EPA 200.8 Digest	Moisture Content	PAH (Polynuclear Aromatic Hydrocarbons) in	TRH (Total Recoverable Hydrocarbons) in Soil	Volatile Petroleum Hydocarbons in Soil
001	QC1	1	7	1	21	3	12

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

CHAIN OF CUSTODY

JBS ENVIRONMENTAL

PROJECT NO.: 41486
PROJECT NAME: Hurstville Privates
SEND REPORT TO: D. Ovd, N. Cussen SEND INVOICE TO: Amy Worth
DATE NEEDED BY: Standard Turn Around
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

LABORATORY BATCH NO.
SAMPLERS C.B. Roberts, N. Cussen
PHONE: 02 8338 1011 EMAIL: Dord@jbsgroup.com.au
QC LEVEL: NEPM 1999 (✓) Cbroberts@jbsgroup.com.au
NCussen@jbsgroup.com.au

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Combo 6	BTEX	Combo 3	NOTES
1	MW01	Water	4/3/11		Bottles + Vials + Ice		X			Combo 6 =
2	MW02	↓	↓		↓		X			- TPH
3	MW03						X			- PAH
4	MW04						X			- BTEX
5	MW - QA1						X			- OC/OP/PCB
6X	MW - QC1						X			- Metals
6X	Trip Spike							X		
7X	Trip blank							X		Combo 3 =
8X	Rinsate								X	- Metals
										- TPH
										- PAH
										- BTEX

PLEASE SEND TO SAS

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

Job No: 52672
Date received: 4/3/11
Time received: 8pm
Received by: Z.L.
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

RELINQUISHED BY:	METHOD OF SHIPMENT: COURIER	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: C. Roberts DATE: 4/3/11	CONSIGNMENT NOTE NO.	NAME: Z.L. DATE:	COOLER SEAL - Yes..... No ..... Intact ..... Broken .....
OF: JBS Environmental	TRANSPORT CO.	OF: ELS 4/3/11	COOLER TEMP ..... deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL - Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

JBS Environmental Pty Ltd ABN 67 071 842 638
Phone: (02) 8338-1011
Fax: (02) 8338-1700
128 O'Riordan St, MASCOT NSW 2020
PO Box 940 MASCOT NSW 1460
www.jbsgroup.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 52672

Client:
JBS Environmental Pty Ltd
P.O. Box 940
MASCOT
NSW 1460

Attention: Danielle Ord, Nathan Cussen, Cathy Roberts

Sample log in details:

Your Reference:	**41486, Hurstville Privates**
No. of samples:	8 Waters
Date samples received / completed instructions received	04/03/2011 / 04/03/2011

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: / Issue Date:	11/03/11 / 10/03/11
Date of Preliminary Report:	Not issued

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

Results Approved By:

Nancy Zhang
Chemist

Kasjan Paciuszkiewicz
Chemist

vTRH & BTEX in Water						
Our Reference:	UNITS	52672-1	52672-2	52672-3	52672-4	52672-5
Your Reference	----------	MW01	MW02	MW03	MW04	MW - QA1
Date Sampled	----------	4/03/2011	4/03/2011	4/03/2011	4/03/2011	4/03/2011
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Date analysed	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
TRHC$_6$ - C$_9$	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
o-xylene	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate Dibromofluoromethane	%	103	101	101	101	99
Surrogate toluene-d8	%	100	100	100	100	100
Surrogate 4-BFB	%	100	100	100	100	100

vTRH & BTEX in Water				
Our Reference:	UNITS	52672-6	52672-7	52672-8
Your Reference	----------	Trip Spike	Trip Blank	Rinsate
Date Sampled	----------	4/03/2011	4/03/2011	4/03/2011
Type of sample		Water	Water	Water
Date extracted	-	08/03/2011	08/03/2011	08/03/2011
Date analysed	-	08/03/2011	08/03/2011	08/03/2011
TRHC$_6$ - C$_9$	µg/L	[NA]	[NA]	<10
Benzene	µg/L	74%	<1.0	<1.0
Toluene	µg/L	81%	<1.0	<1.0
Ethylbenzene	µg/L	81%	<1.0	<1.0
m+p-xylene	µg/L	79%	<2.0	<2.0
o-xylene	µg/L	82%	<1.0	<1.0
Surrogate Dibromofluoromethane	%	98	98	99
Surrogate toluene-d8	%	101	100	100
Surrogate 4-BFB	%	101	100	99

sTRH in Water (C10-C36)						
Our Reference:	UNITS	52672-1	52672-2	52672-3	52672-4	52672-5
Your Reference	----------	MW01	MW02	MW03	MW04	MW - QA1
Date Sampled	----------	4/03/2011	4/03/2011	4/03/2011	4/03/2011	4/03/2011
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Date analysed	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
$TRHC_{10}$ - C_{14}	µg/L	<50	340	<50	<50	<50
$TRHC_{15}$ - C_{28}	µg/L	<100	<100	<100	<100	<100
$TRHC_{29}$ - C_{36}	µg/L	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	130	140	126	116	112

sTRH in Water (C10-C36)		
Our Reference:	UNITS	52672-8
Your Reference	----------	Rinsate
Date Sampled	----------	4/03/2011
Type of sample		Water
Date extracted	-	08/03/2011
Date analysed	-	08/03/2011
$TRHC_{10}$ - C_{14}	µg/L	<50
$TRHC_{15}$ - C_{28}	µg/L	<100
$TRHC_{29}$ - C_{36}	µg/L	<100
Surrogate o-Terphenyl	%	87

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	52672-1 MW01 4/03/2011 Water	52672-2 MW02 4/03/2011 Water	52672-3 MW03 4/03/2011 Water	52672-4 MW04 4/03/2011 Water	52672-5 MW - QA1 4/03/2011 Water
Date extracted	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Date analysed	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Naphthalene	µg/L	<1	1.3	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Surrogate p-Terphenyl-d_{14}	%	110	107	100	98	101

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	52672-8 Rinsate 4/03/2011 Water
Date extracted	-	08/03/2011
Date analysed	-	08/03/2011
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1

PAHs in Water		
Our Reference:	UNITS	52672-8
Your Reference	----------	Rinsate
Date Sampled	----------	4/03/2011
Type of sample		Water
Surrogate p-Terphenyl-d_{14}	%	82

OCP in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	52672-1 MW01 4/03/2011 Water	52672-2 MW02 4/03/2011 Water	52672-3 MW03 4/03/2011 Water	52672-4 MW04 4/03/2011 Water	52672-5 MW - QA1 4/03/2011 Water
Date extracted	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Date analysed	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
HCB	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCLMX	%	96	101	117	105	93

OP Pesticides in water						
Our Reference:	UNITS	52672-1	52672-2	52672-3	52672-4	52672-5
Your Reference	----------	MW01	MW02	MW03	MW04	MW - QA1
Date Sampled	----------	4/03/2011	4/03/2011	4/03/2011	4/03/2011	4/03/2011
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Date analysed	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCLMX	%	96	101	117	105	93

PCBs in Water						
Our Reference:	UNITS	52672-1	52672-2	52672-3	52672-4	52672-5
Your Reference	----------	MW01	MW02	MW03	MW04	MW - QA1
Date Sampled	----------	4/03/2011	4/03/2011	4/03/2011	4/03/2011	4/03/2011
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Date analysed	-	08/03/2011	08/03/2011	08/03/2011	08/03/2011	08/03/2011
Arochlor 1016	µg/L	<2	<2	<2	<2	<2
Arochlor 1221*	µg/L	<2	<2	<2	<2	<2
Arochlor 1232	µg/L	<2	<2	<2	<2	<2
Arochlor 1242	µg/L	<2	<2	<2	<2	<2
Arochlor 1248	µg/L	<2	<2	<2	<2	<2
Arochlor 1254	µg/L	<2	<2	<2	<2	<2
Arochlor 1260	µg/L	<2	<2	<2	<2	<2
Surrogate TCLMX	%	96	101	117	105	93

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	52672-1 MW01 4/03/2011 Water	52672-2 MW02 4/03/2011 Water	52672-3 MW03 4/03/2011 Water	52672-4 MW04 4/03/2011 Water	52672-5 MW - QA1 4/03/2011 Water
Date prepared	-	09/03/2011	09/03/2011	09/03/2011	09/03/2011	09/03/2011
Date analysed	-	09/03/2011	09/03/2011	09/03/2011	09/03/2011	09/03/2011
Arsenic-Dissolved	µg/L	2	<1	2	14	14
Cadmium-Dissolved	µg/L	0.1	<0.1	0.2	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	5	3	10	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4
Nickel-Dissolved	µg/L	20	1	9	29	29
Zinc-Dissolved	µg/L	72	9	48	58	58

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	52672-8 Rinsate 4/03/2011 Water
Date prepared	-	09/03/2011
Date analysed	-	09/03/2011
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.4
Nickel-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	<1

Method ID	Methodology Summary
Org-016	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.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Date analysed	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
$TRHC_6$ - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	91%
Benzene	µg/L	1	Org-016	<1.0	[NT]	[NT]	LCS-W1	91%
Toluene	µg/L	1	Org-016	<1.0	[NT]	[NT]	LCS-W1	92%
Ethylbenzene	µg/L	1	Org-016	<1.0	[NT]	[NT]	LCS-W1	90%
m+p-xylene	µg/L	2	Org-016	<2.0	[NT]	[NT]	LCS-W1	92%
o-xylene	µg/L	1	Org-016	<1.0	[NT]	[NT]	LCS-W1	90%
Surrogate Dibromofluoromethane	%		Org-016	88	[NT]	[NT]	LCS-W1	125%
Surrogate toluene-d8	%		Org-016	100	[NT]	[NT]	LCS-W1	101%
Surrogate 4-BFB	%		Org-016	98	[NT]	[NT]	LCS-W1	102%
QUALITY CONTROL sTRH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Date analysed	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
$TRHC_{10}$ - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	122%
$TRHC_{15}$ - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	83%
$TRHC_{29}$ - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	121%
Surrogate o-Terphenyl	%		Org-003	118	[NT]	[NT]	LCS-W1	127%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Date analysed	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	99%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	107%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	104%
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	105%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	105%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	112%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	110%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	93	[NT]	[NT]	LCS-W1	114%

QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Date analysed	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
HCB	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	94%
gamma-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	95%
Heptachlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	90%
delta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	93%
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	94%
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	95%
Dieldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	95%
Endrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	90%
pp-DDD	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	80%
Endosulfan II	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
pp-DDT	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	97%
Methoxychlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-005	86	[NT]	[NT]	LCS-W1	99%

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	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Date analysed	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Diazinon	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NR]	[NR]
Dimethoate	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NR]	[NR]
Ronnel	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	LCS-W1	60%
Fenitrothion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	LCS-W1	77%
Bromophos ethyl	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NR]	[NR]
Ethion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	LCS-W1	66%
Surrogate TCLMX	%		Org-008	86	[NT]	[NT]	LCS-W1	74%
QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Date analysed	-			08/03/2011	[NT]	[NT]	LCS-W1	08/03/2011
Arochlor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1221*	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	LCS-W1	99%
Arochlor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	86	[NT]	[NT]	LCS-W1	70%
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	-			09/03/2011	[NT]	[NT]	LCS-W1	09/03/2011
Date analysed	-			09/03/2011	[NT]	[NT]	LCS-W1	09/03/2011
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	97%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	85%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	87%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	83%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	94%
Mercury-Dissolved	µg/L	0.4	Metals-021 CV-AAS	<0.4	[NT]	[NT]	LCS-W1	96%

Client Reference: 41486, Hurstville Privates

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	80%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	83%

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	52672-2	09/03/2011
Date analysed	-	[NT]	[NT]	52672-2	09/03/2011
Arsenic-Dissolved	µg/L	[NT]	[NT]	52672-2	99%
Cadmium-Dissolved	µg/L	[NT]	[NT]	52672-2	84%
Chromium-Dissolved	µg/L	[NT]	[NT]	52672-2	85%
Copper-Dissolved	µg/L	[NT]	[NT]	52672-2	80%
Lead-Dissolved	µg/L	[NT]	[NT]	52672-2	90%
Mercury-Dissolved	µg/L	[NT]	[NT]	52672-2	116%
Nickel-Dissolved	µg/L	[NT]	[NT]	52672-2	80%
Zinc-Dissolved	µg/L	[NT]	[NT]	52672-2	95%

Report Comments:

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

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

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 batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

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

SAMPLE RECEIPT ADVICE

Client:

JBS Environmental Pty Ltd
P.O. Box 940
MASCOT NSW 1460

ph: 8338 1013
Fax: 8338 1700

Attention: Danielle Ord, Nathan Cussen, Cathy Roberts

Sample log in details:

Your reference:	**41486, Hurstville Privates**
Envirolab Reference:	**52672**
Date received:	04/03/2011
Date results expected to be reported:	**11/03/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	8 Waters
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

CHAIN OF CUSTODY SGS

JBS ENVIRONMENTAL

PROJECT NO.: 41486
PROJECT NAME: Hurstville Private
SEND REPORT TO: D. Ord, N. Cussen SEND INVOICE TO: Amy Worth
DATE NEEDED BY: Standard Turn Around
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

LABORATORY BATCH NO.
SAMPLERS
PHONE: 02 8338 1011 EMAIL: dord@jbsgroup.com.au
QC LEVEL: NEPM 1999 (✓)

SAMPLE ID	MATRIX	D A T E	TIME	TYPE & PRESERVATIVE	pH	8 Metals	TPH	PAH	BTEX	OC	OP	PCB	NOTES
1 MW-QC1	WATER	4/3/11		Bottles-Vials-ice		x	x	x	x	x	x	x	

SGS
Received 7/3/11
by CO
Time
Samples Intact 5 0
Ice/Cool Pack 0
Temperature on Receipt 5
Storage Location W168
SGS Ref No. SE100137

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: C. Kobentis DATE: 4/3/11	CONSIGNMENT NOTE NO.	NAME: CO DATE:	COOLER SEAL – Yes✓ No ..... Intact ✓ Broken .....
OF: JBS Environmental	TRANSPORT CO.	OF: SGS 7/3/11	COOLER TEMP 5 deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

JBS Environmental Pty Ltd ABN 67 071 842 638
Phone: (02) 8338-1011
Fax: (02) 8338-1700
IMSO FormsO13 – Chain of Custody

128 O'Riordan St, MASCOT NSW 2020
PO Box 940 MASCOT NSW 1460
www.jbsgroup.com.au

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	Danielle Ord
Client	JBS Environmental
Address	Suite 2, 595 Gardeners Road Mascot Sydney NSW 2020
Telephone	02 8338 1011
Facsimile	02 8338 1700
Email	dord@jbsgroup.com.au
Project	**41486 - Hurstville Private - Water**
Order Number	(Not specified)
Samples	1

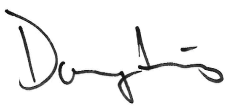
LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE100137 R0
Report Number	0000001093
Date Reported	15 Mar 2011
Date Received	07 Mar 2011

COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

SIGNATORIES



Dong Liang
Inorganics Metals Team Leader

Huong Crawford
Laboratory Manager

Jue Wang
Organic Chemist

Ly Kim Ha
Organics Supervisor

Parameter	Units	LOR	Sample Number SE100137.001 Sample Matrix Water Sample Date 04 Mar 2011 Sample Name MW-QC1
Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434			
TRH C6-C9	µg/L	40	<40
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
MtBE (Methyl-tert-butyl ether)	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total BTEX*	µg/L	3	<3
Total Xylenes*	µg/L	1.5	<1.5
Surrogates			
Trifluorotoluene (Surrogate)	%	-	**80**
TRH (Total Recoverable Hydrocarbons) in Water Method: AN403			
TRH C10-C14	µg/L	100	<100
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
Surrogates			
TRH (Surrogate)	%	-	-
PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420			
Naphthalene	µg/L	0.5	<0.5
2-methylnaphthalene	µg/L	0.5	<0.5
1-methylnaphthalene	µg/L	0.5	<0.5
Acenaphthylene	µg/L	0.5	<0.5
Acenaphthene	µg/L	0.5	<0.5
Fluorene	µg/L	0.5	<0.5
Phenanthrene	µg/L	0.5	<0.5
Anthracene	µg/L	0.5	<0.5
Fluoranthene	µg/L	0.5	<0.5
Pyrene	µg/L	0.5	<0.5
Benzo(a)anthracene	µg/L	0.5	<0.5
Chrysene	µg/L	0.5	<0.5
Benzo(b&k)fluoranthene	µg/L	1	<1.0
Benzo(a)pyrene	µg/L	0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L	0.5	<0.5
Dibenzo(a&h)anthracene	µg/L	0.5	<0.5
Benzo(ghi)perylene	µg/L	0.5	<0.5
Total PAH (18)*	µg/L	9	<9
Surrogates			
d5-nitrobenzene (Surrogate)	%	-	**90**
2-fluorobiphenyl (Surrogate)	%	-	**112**
d14-p-terphenyl (Surrogate)	%	-	**86**

Parameter	Units	LOR	Sample Number SE100137.001 Sample Matrix Water Sample Date 04 Mar 2011 Sample Name MW-QC1
OC Pesticides in Water Method: AN400/AN420			
Hexachlorobenzene	µg/L	0.2	<0.2
Alpha BHC	µg/L	0.2	<0.2
Lindane (gamma BHC)	µg/L	0.2	<0.2
Heptachlor	µg/L	0.2	<0.2
Aldrin	µg/L	0.2	<0.2
Beta BHC	µg/L	0.2	<0.2
Delta BHC	µg/L	0.2	<0.2
Heptachlor epoxide	µg/L	0.2	<0.2
o,p'-DDE	µg/L	0.2	<0.2
Alpha Endosulfan	µg/L	0.2	<0.2
Gamma Chlordane	µg/L	0.2	<0.2
Alpha Chlordane	µg/L	0.2	<0.2
trans-Nonachlor	µg/L	0.2	<0.2
p,p'-DDE	µg/L	0.2	<0.2
Dieldrin	µg/L	0.2	<0.2
Endrin	µg/L	0.2	<0.2
o,p'-DDD	µg/L	0.2	<0.2
o,p'-DDT	µg/L	0.2	<0.2
Beta Endosulfan	µg/L	0.2	<0.2
p,p'-DDD	µg/L	0.2	<0.2
p,p'-DDT	µg/L	0.2	<0.2
Endosulfan sulphate	µg/L	0.2	<0.2
Endrin aldehyde	µg/L	0.2	<0.2
Methoxychlor	µg/L	0.2	<0.2
Endrin ketone	µg/L	0.2	<0.2
Surrogates			
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**87**
OP Pesticides in Water Method: AN400/AN420			
Dichlorvos	µg/L	1	<1
Dimethoate	µg/L	1	<1
Diazinon (Dimpylate)	µg/L	0.5	<0.5
Fenitrothion	µg/L	0.2	<0.2
Malathion	µg/L	0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
Parathion-ethyl (Parathion)	µg/L	0.2	<0.2
Bromophos Ethyl	µg/L	0.2	<0.2
Methidathion	µg/L	0.5	<0.5
Ethion	µg/L	0.2	<0.2
Azinphos-methyl	µg/L	0.2	<0.2
Surrogates			
2-fluorobiphenyl (Surrogate)	%	-	**112**
d14-p-terphenyl (Surrogate)	%	-	**86**
PCBs in Water Method: AN400/AN420			
Arochlor 1016	µg/L	10	<10
Arochlor 1221	µg/L	10	<10
Arochlor 1232	µg/L	10	<10
Arochlor 1242	µg/L	10	<10
Arochlor 1248	µg/L	10	<10
Arochlor 1254	µg/L	10	<10
Arochlor 1260	µg/L	10	<10
Arochlor 1262	µg/L	10	<10
Arochlor 1268	µg/L	10	<10
Total Arochlors*	µg/L	90	<90

Parameter	Units	LOR	Sample Number SE100137.001 Sample Matrix Water Sample Date 04 Mar 2011 Sample Name MW-QC1
PCBs in Water Method: AN400/AN420 (continued)			
Surrogates			
Tetrachloro-m-xylene (Surrogate)	%	-	**87**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318			
Arsenic, As	µg/L	1	**14**
Cadmium, Cd	µg/L	0.1	<0.1
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	**1**
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	**32**
Zinc, Zn	µg/L	1	**73**
Mercury (dissolved) in Water Method: AN311/AN312			
Mercury	mg/L	0.0001	<0.0001

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Mercury (dissolved) in Water **Method: ME-(AU)-[ENV]AN311/AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB000624	mg/L	0.0001	<0.0001	0%	101%	98%

OC Pesticides in Water **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Hexachlorobenzene	LB000619	µg/L	0.2	<0.2	0%	NA
Alpha BHC	LB000619	µg/L	0.2	<0.2	0%	NA
Lindane (gamma BHC)	LB000619	µg/L	0.2	<0.2	0%	NA
Heptachlor	LB000619	µg/L	0.2	<0.2	0%	98%
Aldrin	LB000619	µg/L	0.2	<0.2	0%	95%
Beta BHC	LB000619	µg/L	0.2	<0.2	0%	NA
Delta BHC	LB000619	µg/L	0.2	<0.2	0%	88%
Heptachlor epoxide	LB000619	µg/L	0.2	<0.2	0%	NA
o,p'-DDE	LB000619	µg/L	0.2	<0.2	0%	NA
Alpha Endosulfan	LB000619	µg/L	0.2	<0.2	0%	NA
Gamma Chlordane	LB000619	µg/L	0.2	<0.2	0%	NA
Alpha Chlordane	LB000619	µg/L	0.2	<0.2	0%	NA
trans-Nonachlor	LB000619	µg/L	0.2	<0.2	0%	NA
p,p'-DDE	LB000619	µg/L	0.2	<0.2	0%	NA
Dieldrin	LB000619	µg/L	0.2	<0.2	0%	92%
Endrin	LB000619	µg/L	0.2	<0.2	0%	99%
o,p'-DDD	LB000619	µg/L	0.2	<0.2	0%	NA
o,p'-DDT	LB000619	µg/L	0.2	<0.2	0%	NA
Beta Endosulfan	LB000619	µg/L	0.2	<0.2	0%	NA
p,p'-DDD	LB000619	µg/L	0.2	<0.2	0%	NA
p,p'-DDT	LB000619	µg/L	0.2	<0.2	0%	81%
Endosulfan sulphate	LB000619	µg/L	0.2	<0.2	0%	NA
Endrin aldehyde	LB000619	µg/L	0.2	<0.2	0%	NA
Methoxychlor	LB000619	µg/L	0.2	<0.2	0%	NA
Endrin ketone	LB000619	µg/L	0.2	<0.2	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB000619	%	-	105%	16%	99%

OP Pesticides in Water **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Dichlorvos	LB000619	µg/L	1	<1	0%	78%
Dimethoate	LB000619	µg/L	1	<1	0%	NA
Diazinon (Dimpylate)	LB000619	µg/L	0.5	<0.5	0%	83%
Fenitrothion	LB000619	µg/L	0.2	<0.2	0%	NA
Malathion	LB000619	µg/L	0.2	<0.2	0%	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB000619	µg/L	0.2	<0.2	0%	75%
Parathion-ethyl (Parathion)	LB000619	µg/L	0.2	<0.2	0%	NA
Bromophos Ethyl	LB000619	µg/L	0.2	<0.2	0%	NA
Methidathion	LB000619	µg/L	0.5	<0.5	0%	NA
Ethion	LB000619	µg/L	0.2	<0.2	0%	95%
Azinphos-methyl	LB000619	µg/L	0.2	<0.2	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
2-fluorobiphenyl (Surrogate)	LB000619	%	-	110%	9%	128%
d14-p-terphenyl (Surrogate)	LB000619	%	-	78%	28%	118%

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

PAH (Polynuclear Aromatic Hydrocarbons) in Water **Method: ME-(AU)-[ENV]AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Naphthalene	LB000619	µg/L	0.5	<0.5	0%	75%
2-methylnaphthalene	LB000619	µg/L	0.5	<0.5	0%	NA
1-methylnaphthalene	LB000619	µg/L	0.5	<0.5	0%	NA
Acenaphthylene	LB000619	µg/L	0.5	<0.5	0%	75%
Acenaphthene	LB000619	µg/L	0.5	<0.5	0%	75%
Fluorene	LB000619	µg/L	0.5	<0.5	0%	NA
Phenanthrene	LB000619	µg/L	0.5	<0.5	0%	75%
Anthracene	LB000619	µg/L	0.5	<0.5	0%	88%
Fluoranthene	LB000619	µg/L	0.5	<0.5	0%	75%
Pyrene	LB000619	µg/L	0.5	<0.5	0%	88%
Benzo(a)anthracene	LB000619	µg/L	0.5	<0.5	0%	NA
Chrysene	LB000619	µg/L	0.5	<0.5	0%	NA
Benzo(b&k)fluoranthene	LB000619	µg/L	1	<1.0	0%	NA
Benzo(a)pyrene	LB000619	µg/L	0.5	<0.5	0%	63%
Indeno(1,2,3-cd)pyrene	LB000619	µg/L	0.5	<0.5	0%	NA
Dibenzo(a&h)anthracene	LB000619	µg/L	0.5	<0.5	0%	NA
Benzo(ghi)perylene	LB000619	µg/L	0.5	<0.5	0%	NA
Total PAH (18)*	LB000619	µg/L	9	<9		

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
d5-nitrobenzene (Surrogate)	LB000619	%	-	80%	14%	76%
2-fluorobiphenyl (Surrogate)	LB000619	%	-	110%	9%	128%
d14-p-terphenyl (Surrogate)	LB000619	%	-	78%	28%	118%

PCBs in Water **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Arochlor 1016	LB000619	µg/L	10	<10	0%	NA
Arochlor 1221	LB000619	µg/L	10	<10	0%	NA
Arochlor 1232	LB000619	µg/L	10	<10	0%	NA
Arochlor 1242	LB000619	µg/L	10	<10	0%	NA
Arochlor 1248	LB000619	µg/L	10	<10	0%	NA
Arochlor 1254	LB000619	µg/L	10	<10	0%	NA
Arochlor 1260	LB000619	µg/L	10	<10	0%	100%
Arochlor 1262	LB000619	µg/L	10	<10	0%	NA
Arochlor 1268	LB000619	µg/L	10	<10	0%	NA
Total Arochlors*	LB000619	µg/L	90	<90		

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Tetrachloro-m-xylene (Surrogate)	LB000619	%	-	105%	16%	113%

Trace Metals (Dissolved) in Water by ICPMS **Method: ME-(AU)-[ENV]AN318**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB000614	µg/L	1	<1	0%	95%	95%
Cadmium, Cd	LB000614	µg/L	0.1	<0.1	0%	95%	96%
Chromium, Cr	LB000614	µg/L	1	<1	0%	86%	92%
Copper, Cu	LB000614	µg/L	1	<1	2%	97%	99%
Lead, Pb	LB000614	µg/L	1	<1	0%	100%	99%
Nickel, Ni	LB000614	µg/L	1	<1	0%	98%	80%
Zinc, Zn	LB000614	µg/L	1	<1	6%	96%	99%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

TRH (Total Recoverable Hydrocarbons) in Water **Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C10-C14	LB000619	µg/L	100	<100	0%	121%	80%
TRH C15-C28	LB000619	µg/L	200	<200	0%	128%	84%
TRH C29-C36	LB000619	µg/L	200	<200	0%	108%	82%

Volatile Petroleum Hydrocarbons in Water **Method: ME-(AU)-[ENV]AN433/AN434**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C6-C9	LB000601	µg/L	40	<40	0%	119%
Benzene	LB000601	µg/L	0.5	<0.5	0%	103%
Toluene	LB000601	µg/L	0.5	<0.5	0%	105%
Ethylbenzene	LB000601	µg/L	0.5	<0.5	0%	105%
m/p-xylene	LB000601	µg/L	1	<1	0%	106%
MtBE (Methyl-tert-butyl ether)	LB000601	µg/L	1	<1	0%	103%
o-xylene	LB000601	µg/L	0.5	<0.5	0%	106%
Total BTEX*	LB000601	µg/L	3	<3	0%	NA
Total Xylenes*	LB000601	µg/L	1.5	<1.5	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Trifluorotoluene (Surrogate)	LB000601	%	-	75%	5%	76%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN311/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with diffential polarity of the elluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependant on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	This analysis is not covered by the scope of accreditation.
^	Performed by outside laboratory.
LOR	Limit of Reporting
↑↓	Raised or Lowered Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
-	The sample was not analysed for this analyte

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

SAMPLE RECEIPT ADVICE

SE100137

CLIENT DETAILS

Contact	Danielle Ord
Client	JBS Environmental
Address	Suite 2, 595 Gardeners Road Mascot Sydney NSW 2020
Telephone	02 8338 1011
Facsimile	02 8338 1700
Email	dord@jbsgroup.com.au
Project	**41486 - Hurstville Private - Water**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Mon 7/3/2011
Report Due	Tue 15/3/2011
SGS Reference	**SE100137**

SUBMISSION DETAILS

This is to confirm that 1 sample was received on Monday 7/3/2011. Results are expected to be ready by Tuesday 15/3/2011. Please quote SGS reference SE100137 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	1 Water Sample	Type of documentation received	COC
Date documentation received	7/3/2011	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	Cool
Sample container provider	Other Lab	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

Sample received at SGS 07/03/2011@5:00pm.

SAMPLE RECEIPT ADVICE

SE100137

CLIENT DETAILS

Client	JBS Environmental	Project	41486 - Hurstville Private - Water

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	OC Pesticides in Water	OP Pesticides in Water	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	Volatile Petroleum Hydrocarbons in Water
001	MW-QC1	1	26	13	21	11	7	4	14

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

Document Status

Rev No.	Author	Reviewer	Approved for Issue		
		Name	Name	Signature	Date
A	Danielle Ord	Charlie Furr		DRAFT for internal review	16/03/2011
B	Danielle Ord	Charlie Furr	Charlie Furr	DRAFT for client Review	18/03/2011
0	Danielle Ord	Charlie Furr	Charlie Furr		9/06/2011