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Project 34275.02
28 February 2012
MGrev2

Attention: Mr Scott Lawlor

Email: scott.lawlor@capitalinsight.com.au

Dear Sirs

Phase 2 Contamination Assessment Summary Report,
Stage 1 – Acute Health Services Building, Campbelltown Hospital, Therry Road, Campbelltown

1. Introduction

This letter report provides a summary of the methodology and findings of a Phase 2 Contamination Assessment undertaken for the proposed Stage 1 redevelopment (the Site) of the existing Campbelltown Hospital at Therry Road, Campbelltown (see Drawing 1).

This summary report will be used to support the Stage 1 redevelopment development application. The investigation was undertaken concurrently with a Phase 2 contamination assessment for the entire proposed hospital development, of which the Stage 1 redevelopment area is a component. The final report for the entire proposed hospital development, including the Stage 1 redevelopment area will be reported on separately.

The investigation was commissioned as a variation of the Health Infrastructure agreement (Contract No. HI11042) dated 4 March 2011 and was undertaken in accordance with Douglas Partners' proposal dated 25 November 2011 and subsequent proposal dated 9 February 2012.

The development includes the construction of a six storey Acute Health Services building, an above-ground link structure to surrounding structures, a visitors car park, a footpath and landscaped areas. As indicated in *Phase 2 Contamination Scope Plan* (Drawing A-EW-04 dated 23 November 2011) and subsequent *Acute Health Services Stage 1 Site Plan* (Drawing A-AHS-DA-A04 dated 23 January 2012) provided by the Capital Insight, the site has an approximate accessible area of 1 ha (refer to Drawing 1, attached).

Douglas Partners Pty Ltd (DP) undertook a concurrent geotechnical and Phase 1 contamination assessment of the whole Campbelltown Hospital Development in May 2011 (*Geotechnical Investigation Proposed Campbelltown Redevelopment* 10 May 2011 34275.00 and *Phase 1 Contamination Assessment* 13 May 2011 34275.01) The Phase 1 identified the following AECs relating to the Stage 1 site:

- **Underground Petroleum Storage System (UPSS)** - a UPSS was identified in the car park at the front of the Cancer Treatment Centre, within the proposed Stage 1 development area. The UPSS

may have a potential to affect the Site due to fuel leaks or spills from the UPSS and subsequent migration.

- **Filling** - There is significant filling located within the proposed AHS building footprint, previously identified to depths of up to 4.9 m, however, some bores hit refusal within filling which indicates the possibility of even deeper fill. Some portions of this filling contained anthropogenic material, such as concrete and steel fragments. The fill is likely to have been imported to the Site from a source unknown.

The Phase 1 borehole logs within the Stage 1 area and the observations that were recorded have been included in this assessment.

The objective of this assessment is to further evaluate the contamination status of the Site and its suitability, from a contamination standpoint, for the proposed development.

Douglas Partners undertook the site investigation on 22 December 2011 and between the 22 January and 31 January 2012.

2. Scope of Works

The scope of work for the Phase 2 Contamination Assessment was as follows:

- Review of previous reports;
- Inspection of the Site;
- Undertake service conduit location;
- To extend the Phase 1 characterisation of the filling and further determine the contamination status of the site, twenty one boreholes were drilled to a depth of between 0.6 m and 10 m. To increase sample distribution four sets of boreholes were drilled, as follows:
  - seven shallow boreholes in the proposed visitors car park, footpath and landscaped areas (BH113 to BH115, BH116 to BH118 and BH128) with proposed completion depths of 2.5 m;
  - six shallow boreholes within the area of deep filling, with proposed maximum completion depths of 2.5 m (BH140-BH145);
  - five deep boreholes within the area of deep filling, with proposed completion depths of 5 m (BH129 -BH132 and BH136); and
  - three UPSS investigation boreholes (MW104-MW106), completed as monitoring wells, with proposed completion depths of 10 m.

  All boreholes were terminated into natural material except for BH140 to BH145 which were completed at 2.5 m even while still in filling. This was done to increase sample distribution within the filling while still determining the vertical extent of the filling in all areas. The soil profile encountered in each location was logged. Soil samples were collected at regular intervals from the twenty one locations for contamination assessment purposes;
- Analysis of selected soil samples for the following common contaminants at a NATA accredited laboratory:
  - heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc);
  - total petroleum hydrocarbons (TPH);

  - monocyclic aromatic hydrocarbons (benzene, toluene, ethyl benzene and xylenes – BTEX);
  - polycyclic aromatic hydrocarbons (PAH);
  - phenols;
  - organochlorine pesticides (OCP), organophosphorous pesticides (OPP) and polychlorinated biphenyls (PCB);and
  - asbestos;
- The three UPSS investigation boreholes were completed as groundwater monitoring wells;
- The groundwater wells were developed and samples collected using a low flow purge technique to minimise the loss of volatile compounds. Field parameters of pH, electrical conductivity, dissolved oxygen and redox potential were recorded and allowed to stabilise prior to sampling;
- Analysis of groundwater samples for the following common contaminants at a NATA accredited laboratory:
  - lead;
  - total petroleum hydrocarbons (TPH)
  - monocyclic aromatic hydrocarbons (benzene, toluene, ethyl benzene and xylenes – BTEX);
  - polycyclic aromatic hydrocarbons (PAH) (low level);
- Field sampling and laboratory analysis in compliance with standard environmental protocols, including a Quality Assurance/Quality Control (QA/QC) plan consisting of 10% duplicate sampling, and appropriate Chain-of-Custody procedures and in-house laboratory QA/QC testing;
- A data assessment of laboratory results was undertaken comparing the results to applicable site assessment criteria (SAC) for soil and groundwater; and
- Preparation of a Phase 2 Contamination letter report detailing the methodology, results and recommendations of the assessment.

3. Sample Rationale

The Phase 2 Contamination Assessment was based on the results of the Phase 1 Contamination Assessment undertaken in May 2011 and was devised with reference to the NSW EPA's *Contaminated Sites: Sampling Design Guidelines* (1995) which, for a site with an approximate accessible area of 1 ha, recommends a sampling density of 21 sampling locations.

The Phase 1 identified filling and a UPSS within the Stage 1 area, from a review of twelve geotechnical boreholes (within the Stage 1 area) and WorkCover NSW records respectively. As such the Phase 1 identified these as areas of environmental concern affecting the Stage 1 development.

The sampling rationale for the areas of filling was based on a further assessment of the vertical extent of the filling in areas where deep fill had previously been encountered (to refusal) and to further characterise the filling. As such, sample locations were judgemental, targeting areas where fill was expected while still giving a complete spread across the site. Samples were collected and analysed from the fill layer and, as no exceedances of the site acceptance criteria were noted, analysis of the underlying natural material was not deemed necessary.

The sampling rationale for the area surrounding the UPSS was based on identifying any potential contamination issues relating to potential fuel leaks or spills from the UPSS and subsequent migration from the UPSS onto the Site. The sample locations were placed, where practicable, around the UPSS in order to identify any impacted soils within the vicinity of the UPSS and with the objective of intercepting the indicative perched groundwater and the groundwater localised around the UPSS. Groundwater and soil samples were collected and analysed from each of the bores and wells respectively. Shallow bedrock precluded the collection and analysis of deeper soil samples.

It is understood that the proposed corridor link is to comprise above ground structures with steel or concrete supports. For this reason and due to access restrictions, the areas below the proposed corridor link were not sampled during this assessment.

4. Sample collection and handling

A total of thirteen shallow fill investigation boreholes (seven in the proposed visitors car park, footpath and landscaped areas and six in the area of deep filling), five deep fill investigation boreholes and three UPSS investigation boreholes were drilled over the 1 ha site, and were either terminated in natural material or in filling at 2.5 m (BH140-BH145). Soil samples were collected from the near surface horizon with continued regular sampling until bedrock was encountered.

The shallow fill investigation boreholes were drilled using a Kubota KX41-3V mini excavator with a power auger attachment and solid stem auger.

The deep fill investigation and UPSS investigation boreholes were drilled using a Gemco 210B drill rig utilising auger and mud flush rotary drilling techniques. The three UPSS investigation bores were then converted to groundwater monitoring wells using 50 mm diameter, acid washed, class 18, PVC casing and machine slotted well screens to depths of between 6.2 m and 10 m which were finished with lockable flush covers. Details of the well construction are shown on the borehole logs attached.

Sample collection and handling was undertaken in accordance with DP's standard operating procedures. The general sampling, handling, transport and tracking procedures comprised:

- Provision of logs for all sample locations. Records include GPS coordinates and surface levels (interpolated from plans provided) of the locations, description of the conditions encountered, the depth of samples collected, the name of the person logging and the equipment used;
- The use of disposable sampling equipment (nitrile gloves);
- Decontamination of sampling equipment including drilling tools between each sampling locations to prevent potential cross-contamination;
- Transfer of the sample for chemical analysis using new glass jars supplied by the NATA accredited laboratory and sealed with a Teflon lined lid to eliminate cross contamination during transportation to the laboratory;
- Transfer of sample for asbestos analysis using new, sealable, plastic bags;
- Labelling of the sample containers with individual and unique identification including project number, test location identification and depth;
- Placement of the containers into a chilled, enclosed and secure container for transport to the laboratory;

- Collection of duplicate samples at a rate of approximately 10% of samples analysed and the use of trip blanks and trip spikes for QA/QC purposes; and
- Use of chain-of-custody documentation to enable sample tracking and custody to be cross-checked at any point in the transfer of samples from the field to handover to the laboratory;

The three monitoring wells were developed by the removal of groundwater until the well was dry. Well development provides a good hydraulic connection to the aquifer and removes sediments associated with drilling and installation. The wells were allowed to recharge and stabilise before sampling was undertaken.

Groundwater sampling was conducted on 31 January 2012. Groundwater sample collection and handling was undertaken in accordance with DP's standard operating procedures and the groundwater sampling field sheets, including a summary of the field parameters and the calibration certificates for the sampling equipment used are attached. The general sampling, handling, transport and tracking procedures comprised:

- Dipping each well with an interface meter to assess the presence of free product on the phreatic surface;
- Completion of groundwater sampling field sheets. Records include relative levels, bore groundwater levels, bore development details, multi-parameter readings for groundwater stabilisation, weather conditions, time of sampling, sample appearance, preservation containers, observations of signs of contamination (including olfactory), logger and equipment used;
- Stabilising the groundwater flow using a positive displacement, low flow pump (micropurge) with flow rates of 0.2 – 0.5 L/min in order to minimise aeration of the sample and disturbance to the water column, thus increasing accuracy of field parameters and reducing potential losses of volatile contaminants. The field parameters of dissolved oxygen, conductivity, pH, REDOX and temperature were measured, and the sample was collected when the parameters were stabilised;
- Collection of water samples by carefully pumping/decanting into laboratory prepared sample containers;
- The use of disposable tubing and pump bladders, which were replaced between each sampling location. The stainless steel pump canister and filtering equipment were decontaminated using 3% solution of phosphate free detergent (Decon 90) then rinsing with distilled water between each sampling location;
- Labelling of sample containers with individual and unique identification, including project number, sample location and date;
- Collection of duplicate samples at a rate of approximately 10% of samples analysed for QA/QC purposes; and
- Placement of containers into a chilled, enclosed and secure container for transport to the laboratory. Chain-of-custody documentation was included to enable sample tracking and custody to be cross-checked at any point in the transfer of samples from the field to hand-over to the laboratory.

5. Fieldwork Observations

The Phase 1 and Phase 2 boreholes encountered the following general profile:

Filling – Surface filling which was encountered in all boreholes comprised of a dark grey/brown silty gravely clay or a sandy gravely clay to depths ranging between 0.2 m (BH113 to BH115) to 5.5 m (BH130). The Phase 2 shallow investigation boreholes, BH140 to BH145 were all terminated in filling at 2.5 m. Surface filling encountered at the three monitoring well locations comprised asphalt underlain by road base to a depth of between 0.4 m to 0.8 m.

Clay – Natural clays, silty clays and sandy silty clays were encountered below the filling at all locations (except for BH140 to BH145) to borehole termination or depths of between 0.8 m (BH38) to 6 m (BH2).

Weathered – Shale/Siltstone Weathered shale and siltstone was encountered below the natural clays at BH1 to BH5, BH38, BH129, BH136, and MW104 to MW106 to borehole termination.

No staining or olfactory observations where noted during drilling or soil sampling.

No free groundwater was observed within the five shallow and six deep investigation boreholes. However, these boreholes were immediately backfilled on completion which precluded long term monitoring of groundwater levels.

Free groundwater was encountered during drilling in MW106 at a depth of 5.4 m. No free groundwater was observed within the other two monitoring well locations.

The Phase 1 and Phase 2 borehole logs are attached along with accompanying standard notes defining classification methods and descriptive terms.

Groundwater was encountered in all monitoring wells during sampling at depths of 2.0 m, 2.82 m and 1.55 m in MW104, MW105 and MW106 respectively.

No sheens or olfactory observations were noted during groundwater sampling and the groundwater field sheets are attached.

6. Assessment Criteria

The proposed use of the site is as a hospital and, as such, the appropriate soil site assessment criteria (SAC) are considered to be:

- NSW DEC *Contaminated Sites*: *Guidelines for the NSW Site Auditors Scheme*, 2nd edition, 2006. Health-based investigation levels (HIL) for commercial or industrial use (Appendix II, Soil Investigation Levels for Urban Development Sites in NSW, Column 4); and
- NSW EPA *Contaminated Sites: Guidelines for the NSW Site Auditors Scheme* 2nd Edition, 2006, Provisional phytotoxicity-based investigation levels for sandy loams (Appendix II, Column 5).
- NSW EPA *Contaminated Sites: Guidelines for Assessing Service Station Sites, 1994.*

In the absence of other NSW Environment Protection Authority's (EPA) endorsed, comprehensive criteria for total petroleum hydrocarbon guidelines, the EPA (1994) Threshold Concentrations for Sensitive Sites (Table 3, EPA 1994) were adopted.

Groundwater investigation level (GIL) used for this assessment are the ANZECC *Guidelines for Fresh and Marine Water Quality* (2000). However ANZECC 2000 does not provide GILs for TPH, as such laboratory practical quantitation limits (PQL) are used as the GILs. If exceedances of the laboratory PQL are reported then further assessment of VOCs for C6-C9 and PAH for C10-C36 is required.

These criteria are specified in the results summary table, Table 1 and Table 2 attached,

7. Laboratory Analysis

The soil analytical results are summarised in Table 1, attached, together with the adopted SAC. The NATA endorsed laboratory reports are also provided attached to this report.

A total of 26 soil samples were analysed for heavy metals, TPH, BTEX, PAH, OCP, OPP, PCB, phenols and asbestos. One duplicate QA/QC sample was tested for heavy metals.

Concentrations of OPP, OCP, PCB, TPH, BTEX and phenols were reported below their respective laboratory limits of detection in all samples submitted for analysis. Asbestos was not detected in any of the samples submitted for analysis or observed during the investigation.

Concentrations of eight priority heavy metals and PAH were reported above their respective laboratory limits of reporting but only with minor detections and well below their respective SAC in all samples.

The groundwater analytical results are summarised in Table 2, attached, together with the adopted GILs. The NATA endorsed laboratory reports are also attached to this report.

A total of three groundwater samples and one duplicate QAQC groundwater samples were analysed for lead, TPH, BTEX and PAH.

Concentrations of TPH, BTEX and PAH were reported below their respective laboratory limits of reporting in all samples. Lead was reported below its laboratory limit of reporting with the exception of GWMW104 which was reported with a detection of lead at the laboratory limit of reporting only.

8. Discussion and Conclusion

Concentrations of all potential contaminants of concern in soil were below their respective SAC for a commercial (hospital) use. Concentrations of all potential contaminants of concern in groundwater were below their respective GIL for the protection of 95% of freshwater species. .

Based on the findings of this phased contamination assessment, the Site, in its current state, is considered suitable for continued hospital use and, hence, the proposed development. No further investigations for contamination purposes are deemed necessary.

9. Limitations

Douglas Partners (DP) has prepared this report for a project at Campbelltown Hospital, Therry Road Campbelltown, NSW in accordance with DP's proposal dated 25 November 2011 and subsequent proposal dated 9 February 2012 and acceptance received from Mr Scott Lawlor of Capital Insight Pty Ltd on behalf of Health Infrastructure – NSW Health on 9 December 2011 and 14 February 2012 respectively. The report is provided for the exclusive use of Health Infrastructure – NSW Health for this project only and for the purpose(s) described in the report. It should not be used for other projects or by a third party. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions only at the specific sampling or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of anthropogenic influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be limited by undetected variations in ground conditions between sampling locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached notes and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion given in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Please contact either of the undersigned for clarification of the above as necessary.

Yours faithfully
Douglas Partners Pty Ltd

Michael Gol
Environmental Engineer

Reviewed by

for: **Lindsay Rockett**
Principal

Attachments:
Notes About this Report
Drawing 1
Table 1 – Summary Table Soil Analytical Results
Table 2 – Summary Table Groundwater Analytical Results
Borehole Logs and Groundwater Field Sheets
Certified Laboratory Reports and Chain of Custody Form
Quality Assurance and Quality Control

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Sampling Methods

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Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Symbols & Abbreviations

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Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core Drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

General


Asphalt


Road base


Concrete


Filling

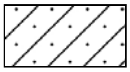
Soils


Topsoil

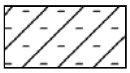

Peat


Clay

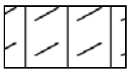

Silty clay

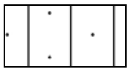

Sandy clay

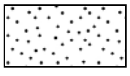

Gravelly clay

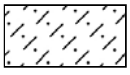

Shaly clay

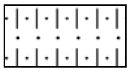

Silt


Clayey silt


Sandy silt

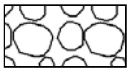

Sand

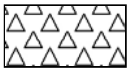

Clayey sand


Silty sand


Gravel


Sandy gravel


Cobbles, boulders

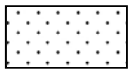

Talus

Sedimentary Rocks

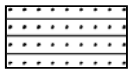

Boulder conglomerate

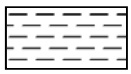

Conglomerate


Conglomeratic sandstone

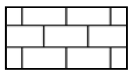

Sandstone


Siltstone


Laminite

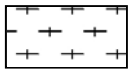

Mudstone, claystone, shale

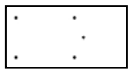

Coal


Limestone

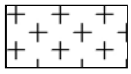
Metamorphic Rocks

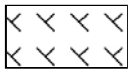

Slate, phyllite, schist

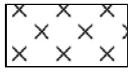

Gneiss

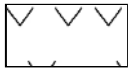

Quartzite

Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

Soil Descriptions

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Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 -5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

Soil Descriptions

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

Rock Strength

Rock strength is defined by the Point Load Strength Index ($Is_{(50)}$) and refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects. The test procedure is described by Australian Standard 4133.4.1 - 1993. The terms used to describe rock strength are as follows:

Term	Abbreviation	Point Load Index $Is_{(50)}$ MPa	Approx Unconfined Compressive Strength MPa*
Extremely low	EL	<0.03	<0.6
Very low	VL	0.03 - 0.1	0.6 - 2
Low	L	0.1 - 0.3	2 - 6
Medium	M	0.3 - 1.0	6 - 20
High	H	1 - 3	20 - 60
Very high	VH	3 - 10	60 - 200
Extremely high	EH	>10	>200

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Extremely weathered	EW	Rock substance has soil properties, i.e. it can be remoulded and classified as a soil but the texture of the original rock is still evident.
Highly weathered	HW	Limonite staining or bleaching affects whole of rock substance and other signs of decomposition are evident. Porosity and strength may be altered as a result of iron leaching or deposition. Colour and strength of original fresh rock is not recognisable
Moderately weathered	MW	Staining and discolouration of rock substance has taken place
Slightly weathered	SW	Rock substance is slightly discoloured but shows little or no change of strength from fresh rock
Fresh stained	Fs	Rock substance unaffected by weathering but staining visible along defects
Fresh	Fr	No signs of decomposition or staining

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with some fragments
Fractured	Core lengths of 40-200 mm with some shorter and longer sections
Slightly Fractured	Core lengths of 200-1000 mm with some shorter and loner sections
Unbroken	Core lengths mostly > 1000 mm

Rock Descriptions

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

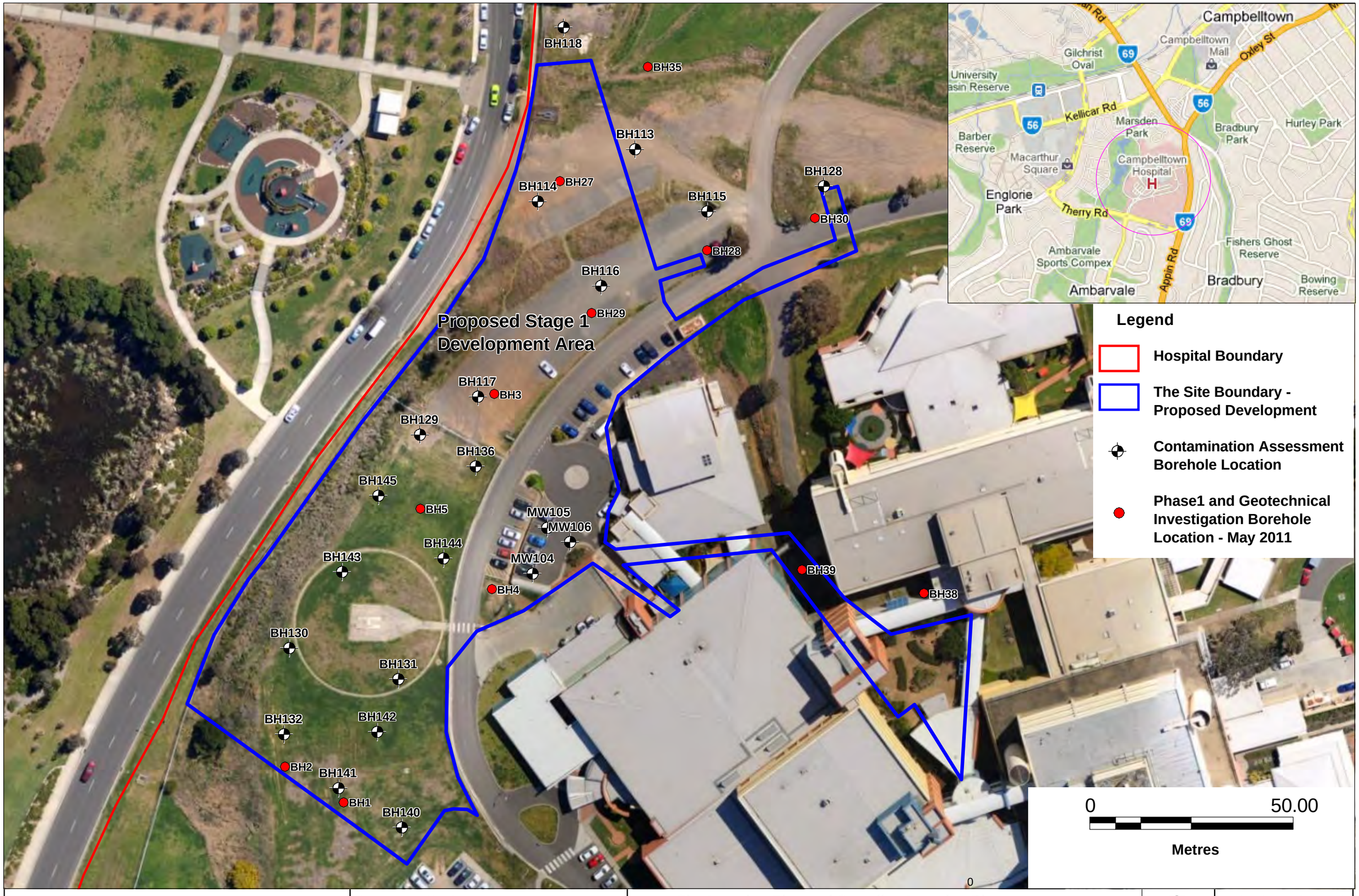
$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq \text{100 mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or better. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m



Legend

- Hospital Boundary
- The Site Boundary - Proposed Development
- Contamination Assessment Borehole Location
- Phase1 and Geotechnical Investigation Borehole Location - May 2011

0 50.00

Metres

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CLIENT: Health Infrastructure		TITLE: **Site Location Plan and Sampling Location Plan** **Stage 1 Redevelopment - Acute Health Services Building** **Campbelltown Hospital, Therry Road, Campbelltown**
OFFICE: Campbelltown	DRAWN BY: MG	
SCALE: As shown	DATE: 27.02.2012	

N
MGA

PROJECT No:	34275.02
DRAWING No:	1
REVISION:	C

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Geotechnics | Environment | Groundwater

Table 1 - Results of Soil Analysis (All results in mg/kg unless otherwise stated)

Sample ID	Sampling Date	Heavy Metals								PAH		TPH				Benzene	Toluene	Ethylbenzene	Total Xylene	PCB [c]	OCP [c]				OPP [c]	Phenols	Asbestos [d]
		As	Cd	Cr [b]	Cu	Pb	Hg	Ni	Zn	B(a)P	total [c]	C6-C9	C10-C14	C15-C28	C29-C36						Aldrin + dieldrin	Chlordane	DDT + DDD + DDE	Heptachlor			
BH113/0.2	22/12/2011	6	<0.5	16	43	28	<0.1	15	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH114/0.2	22/12/2011	6	<0.5	22	23	21	<0.1	7	21	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH115/0.2	22/12/2011	<4	<0.5	24	37	7	<0.1	45	29	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH116/0.2	22/12/2011	6	<0.5	13	38	28	<0.1	18	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH117/0.2	22/12/2011	5	<0.5	8	40	24	<0.1	27	75	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	No asbestos fragments or asbestos fibres detected
BH117/1.3	22/12/2011	8	<0.5	4	29	28	<0.1	21	38	0.07	1.1	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	-
BH118/0.2	22/12/2011	5	<0.5	13	24	27	<0.1	5	25	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-
BH128/0.5	23/12/2011	5	<0.5	13	38	31	<0.1	17	65	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BD6/23122011	23/12/2011	7	<0.5	16	31	33	<0.1	16	54	-	-	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	-
MW104/2.5-2.6	24/01/2012	<4	<0.5	6	44	26	<0.1	22	140	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	-
MW105/1.5-1.6	24/01/2012	5	<0.5	9	51	19	<0.1	7	37	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	<PQL	-
MW105/2.5-2.6	24/01/2012	<4	<0.5	7	60	29	<0.1	20	110	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	<PQL	-
MW106/3.5-3.6	25/01/2012	5	0.5	8	45	20	<0.1	25	77	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	<PQL	-
BH129/2.5-2.6	25/01/2012	<4	<0.5	6	38	22	<0.1	15	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH130/1.0-1.1	25/01/2012	<4	<0.5	8	47	23	<0.1	25	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH130/4.9-5.0	25/01/2012	5	<0.5	7	44	21	<0.1	18	71	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	-
BH131/0.1-0.2	25/01/2012	4	<0.5	9	36	21	<0.1	19	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH131/2.5-2.6	25/01/2012	<4	<0.5	9	46	18	<0.1	26	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH132/0.5-0.6	25/01/2012	6	0.6	6	50	23	<0.1	28	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BD3/250112	25/01/2012	5	0.5	6.2	37	21	<0.05	23	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH132/2.5-2.6	25/01/2012	4	<0.5	6	39	24	<0.1	32	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH140/0.5	31/01/2012	6	<0.5	13	35	22	<0.1	13	47	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH140/2.5	31/01/2012	4	<0.5	9	41	19	<0.1	21	63	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	-
BH141/0.2	31/01/2012	5	<0.5	7	44	22	<0.1	24	81	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	No asbestos fragments or asbestos fibres detected
BH142/1	31/01/2012	6	<0.5	12	36	23	<0.1	10	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
BH143/2.5	31/01/2012	6	<0.5	10	33	20	<0.1	13	50	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	-
BH144/0.5	31/01/2012	4	<0.5	6	47	20	<0.1	22	75	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	No asbestos fragments or asbestos fibres detected
BH145/1	31/01/2012	5	<0.5	7	49	29	0.1	27	86	<0.05	<PQL	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL	-	-	-	-	-	-	-	No asbestos fragments or asbestos fibres detected
Site Assessment Criteria (SAC)																											
C4		500	100	60%	5000	1500	75	3000	35000	5	100	65*	1000*			1*	1.4*	3.1*	14*	50	50	250	1000	50	ND	42500	0.01% / 0.001% [f]
PPIL		20	3	400	100	600	1	60	200	ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01% / 0.001% [f]
NEPC		1-50	100-300	5-1000	2-100	2-200	0.03	5-500	10-300	ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ANZECC		0.2-3	0.04-2	0.5-110	1-190	<2-200	0.001-0.1	2-400	2-180	ND	0.95-5	ND	ND			0.05-1	0.1-1	ND	ND	0.02-0.1	ND	ND	ND	ND	ND	0.03-0.5	ND

Notes

	all results in mg/kg unless otherwise stated
a	QA/QC duplicate of sample listed directly below
b	All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable under the normal environment
c	where analytical results below laboratory practical quantitation limit (PQL) for all compounds, results quoted as <PQL of most compounds
d	0.01% asbestos cement / 0.001% for asbestos fibres (WA Department of Health)
ND	not defined
*	Threshold concentrations for sensitive sites, NSW EPA Guidelines for Assessing Service Station Sites, 1994. (for TRH and BTEX, for all land uses).
C4	NSW DEC Contaminated Sites: *Guidelines for the NSW Site Auditors Scheme 2nd Edition, 2006.* Health-based guidelines for commercial or industrial (Column 4)
PPIL	NSW DEC Contaminated Sites: *Guidelines for the NSW Site Auditors Scheme 2nd Edition, 2006.* Provisional phytotoxicity-based investigation levels for sandy loams (Column 5)
NEPC	NEPC (1999). National Environmental Protection (Assessment of Site Contamination) Measure Schedule B(1) Guidelines on the Investigation Levels for Soil and Groundwater, Background Ranges
ANZECC	Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council (ANZECC/NHMRC): Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (1992), Environmental Soil Quality Guidelines, Table 2 Column A Background
-	not analysed / not applicable

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Table 2 - Results of Groundwater Analysis (All results in µg/L unless otherwise stated)

Sample ID	Sampling Date	Pb	PAH		TPH	Benzene	Toluene	Ethylbenzene	m + p Xylene	o Xylene
			Naphthalene	total[b]	C6-C36[b]					
GWMW104	40939	1	<1	<PQL	<PQL	<1	<1	<1	<2	<1
GWBD1/31012012	40939	<1	<1	<PQL	-	-	-	-	-	-
GWMW105	40939	<1	<1	<PQL	<PQL	<1	<1	<1	<2	<1
GWMW106	40939	<1	<1	<PQL	<PQL	<1	<1	<1	<2	<1
Generic Groundwater Investigation Levels (GIL)										
Fresh - high reliability[c]		3.4	16	20	[d]	950	ND	ND	200[e]	350
Reference Values										
Fresh - low reliability[f]		-	-	-	-	-	180	80	-	-
Trigger Value for Duty to Report[g]		-	-	-	600[h]	-	800	300	600	

Notes

	all results in µg/L unless otherwise stated
a	QA/QC replicate of sample listed directly below
b	where analytical results below laboratory practical quantitation limit (PQL) for all compounds, results quoted as <PQL of most compounds
c	ANZECC (2000) Guidelines for the protection of aquatic ecosystems – Fresh Waters (2000) – 95% LOP
d	ANZECC 2000 does not provide GILs for TPH, as such laboratory practical quantitation limits (PQL) are used as the GILs. If exceedances of the laboratory PQL are reported then further assessment of VOCs for C6-C9 and PAH for C10-C36 is required.
e	Threshold for p-xylene, no high reliability threshold for m-xylene available
f	ANZECC (2000). Low reliability trigger value for fresh water
g	Trigger value for drinking water (as required for groundwater) as defined in NSW DECC *Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997, Appendix A, Column 1*
h	Soil Remediation Circular 2009 - groundwater intervention values (in absence of other guidelines)
ND	not defined
-	not analysed / not applicable

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 76.7 m AHD
EASTING: 297472
NORTHING: 6227200
DIP/AZIMUTH: 90°/--

BORE No: BH113
PROJECT No: 34275.02
DATE: 22/12/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
76	0.2	FILLING - grey and brown gravelly clay, fine to coarse grained (shale) gravel with some larger cobbles		E	0.2				
		CLAY - stiff, brown/orange brown clay with some fine to medium grained (ironstone and shale) gravel, mc<pl		E	0.5				
	0.8	Bore discontinued at 0.8m limit of investigation							
75	1								
74	2								
73	3								
72	4								
71	5								
70	6								

RIG: Kubota KX41-3V **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 76.2 m AHD
EASTING: 297448
NORTHING: 6227187
DIP/AZIMUTH: 90°/--

BORE No: BH114
PROJECT No: 34275.02
DATE: 22/12/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
76	0.2	FILLING - well compacted, dark grey to brown sandy gravelly clay, mc<pl		E	0.2				
		CLAY - stiff, brown/orange brown clay with some fine to medium grained (ironstone and shale) gravel, mc<pl		E	0.5				
		- becoming mottled light grey at 0.5m							
	0.8	- becoming red brown at 0.7m							
	1	Bore discontinued at 0.8m limit of investigation							
75									
	2								
74									
	3								
73									
	4								
72									
	5								
71									
	6								
70									

RIG: Kubota KX41-3V **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 77.7 m AHD
EASTING: 297490
NORTHING: 6227185
DIP/AZIMUTH: 90°/--

BORE No: BH115
PROJECT No: 34275.02
DATE: 22/12/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
77	0.3	FILLING - grey and brown gravelly clay, fine to coarse grained (shale) gravel with some larger cobbles		E	0.2				
		CLAY - stiff, brown/orange brown clay with some fine to medium grained (ironstone and shale) gravel, mc<pl - becoming mottled grey at 0.5m - becoming orange brown at 0.8m		E	0.5				
	0.9	Bore discontinued at 0.9m limit of investigation							
76	1								
75	2								
74	3								
73	4								
72	5								
71	6								

RIG: Kubota KX41-3V **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 78.7 m AHD
EASTING: 297464
NORTHING: 6227167
DIP/AZIMUTH: 90°/--

BORE No: BH116
PROJECT No: 34275.02
DATE: 22/12/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
78	0.9	FILLING - grey and brown gravelly clay, fine to coarse grained (shale) gravel with some larger cobbles		E	0.2				
				E	0.5				
	1	SILTY CLAY - firm to stiff, brown silty clay with some fine grained (ironstone) gravel, mc<pl		E	1.0				1
		- becoming red brown at 1.3m							
	1.5	Bore discontinued at 1.5m limit of investigation							
77	2								2
76	3								3
75	4								4
74	5								5
73	6								6
72									

RIG: Kubota KX41-3V **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.8 m AHD
EASTING: 297433
NORTHING: 6227139
DIP/AZIMUTH: 90°/--

BORE No: BH117
PROJECT No: 34275.02
DATE: 22/12/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
79	0	FILLING - well compacted, dark grey to brown sandy gravelly clay, mc<pl		E	0.2				
		- light grey and orange brown gravelly clay (reworked clays), mc<pl at 0.5m		E	0.5				
	1								1
		- coalwash band, coal cobbles to 50mm from 1.25 - 1.3m		E	1.3				
78	2								2
77	2.8	SILTY CLAY - stiff, orange brown silty clay, mc~pl							
	3								3
	3.5	Bore discontinued at 3.5m limit of investigation							
76	4								4
75	5								5
74	6								6
73									

RIG: Kubota KX41-3V **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 75.4 m AHD
EASTING: 297455
NORTHING: 6227230
DIP/AZIMUTH: 90°/--

BORE No: BH118
PROJECT No: 34275.02
DATE: 22/12/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
75	0.02	GRAVEL - 20mm recycled roadbase							
	0.05	TOPSOIL - brown/dark brown silt and clay with frequent rootlets, mc>pl		E	0.2				
		SILTY CLAY - stiff to very stiff, orange brown silty clay with some fine to medium grained (ironstone and igneous) gravel, mc<pl		E	0.5				
	0.6	- becoming orange brown mottled light grey at 0.4m							
		Bore discontinued at 0.6m limit of investigation							
74	1								
73	2								
72	3								
71	4								
70	5								
69	6								

RIG: Kubota KX41-3V **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.4 m AHD
EASTING: 297518
NORTHING: 6227191
DIP/AZIMUTH: 90°/--

BORE No: BH128
PROJECT No: 34275.02
DATE: 23/12/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
79	0	FILLING - well compacted, brown to light brown gravelly clay, mc<pl		E	0.2				
		- some small glass fragments observed at 0.5m		E*	0.5				
	1								1
78	1.3	SILTY CLAY - stiff, orange brown silty clay with some fine to medium grained (ironstone) gravel, mc~pl		E	1.8				
	1.9	Bore discontinued at 1.9m limit of investigation							
	2								2
77									
	3								3
76									
	4								4
75									
	5								5
74									
	6								6
73									

RIG: Kubota KX41-3V **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. E* = BD6 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 80.4 m AHD
EASTING: 297419
NORTHING: 6227130
DIP/AZIMUTH: 90°/--

BORE No: BH129
PROJECT No: 34275.02
DATE: 25/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
80	0.1	FILLING - brown and grey silty gravel filling			0.1				
		FILLING - brown and grey gravelly silty sandy clay filling, dry		A					
				A	0.5				
					0.6				
					0.7				
79	1			A	1.0				
					1.1				
78	2			A	2.5				
					2.6				
77	3								
	3.4	CLAY - firm, orange mottled grey clay, humid							
76	4			A	4.0				
					4.1				
	4.6	SHALE - very low to low strength, grey shale							
	5			A	4.9				
	5.0	Bore discontinued at 5.0m limit of investigation			5.0				
75	6								
74									

RIG: Gemco 210B **DRILLER:** P Boers **LOGGED:** BAH **CASING:**

TYPE OF BORING: 100mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.6 m AHD
EASTING: 297387
NORTHING: 6227077
DIP/AZIMUTH: 90°/--

BORE No: BH130
PROJECT No: 34275.02
DATE: 25/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0.2	FILLING - slightly gravelly clayey silt filling		A	0.1				
		FILLING - brown gravelly silty clay filling, dry			0.2				
				A	0.5				
		- orange electrical conduit at 0.7m			0.6				
		- grey gravelly (shale) clayey silt filling below 0.8m							
81	1			A	1.0				
					1.1				
	2								
80				A	2.5				
	3				2.6				
	3.1	FILLING - very low to low strength, grey shale filling							
79	4								
	4.1	FILLING - dark orange slightly silty clay filling							
		- becoming light grey orange clay filling below 4.3m							
78		- becoming grey gravelly (shale) silty clay filling below 4.6m							
	5			A	4.9				
					5.0				
	5.5	SANDY SILTY CLAY - orange brown slightly sandy silty clay with trace gravel and rootlets		A	5.5				
77					5.6				
	6	6.0 Bore discontinued at 6.0m limit of investigation							
76									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 83.1 m AHD
EASTING: 297414
NORTHING: 6227070
DIP/AZIMUTH: 90°/--

BORE No: BH131
PROJECT No: 34275.02
DATE: 25/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
83	0.2	FILLING - dark brown and orange gravelly silty clay filling		A	0.1–0.2				
		FILLING - grey gravelly silt (crushed shale) with some fine to medium grained sand and red orange clay filling		A	0.5–0.6				
82	1			A	1.0–1.1				
81	2								
				A	2.5–2.6				
80	3								
		- becoming more sandy and clayey below 3.8m							
79	4								
	4.3	SILTY CLAY - orange brown slightly sandy silty clay							
	4.4	CLAY - orange mottled grey brown clay, damp							
	5			A	4.9–5.0				
78	5.0	Bore discontinued at 5.0m limit of investigation							
	6								
77									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.2 m AHD
EASTING: 297386
NORTHING: 6227056
DIP/AZIMUTH: 90°/--

BORE No: BH132
PROJECT No: 34275.02
DATE: 25/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0.3	FILLING - brown grey orange gravelly silty clay filling		A	0.1 0.2				
		FILLING - grey slightly sandy clayey gravelly (crushed shale) silt filling and trace concrete fragments (crushed shale)		A*	0.5 0.6				
81	1	- becoming orange brown silty gravelly clay filling below 0.9m		A	1.0 1.1				
		- becoming grey gravelly clayey silt filling with trace fine grained sand below 1.4m							
80	2			A	2.5 2.6				
	2.7	FILLING - grey brown silty gravelly clay filling, damp							
79	3 3.0	FILLING - grey fine grained gravelly (shale) clayey silt filling							
78	4								
	4.4	FILLING - dark orange and light orange clay filling (reworked natural)							
	4.7	CLAY - dark brown mottled orange slightly silty clay, damp		A	4.9				
77	5 5.0	Bore discontinued at 5.0m limit of investigation			5.0				
76	6								

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. A* = BD3/250112 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 80.9 m AHD
EASTING: 297433
NORTHING: 6227122
DIP/AZIMUTH: 90°/--

BORE No: BH136
PROJECT No: 34275.02
DATE: 25/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
80	0.0	FILLING - brown silty gravelly clay filling with rootlets		A	0.1				
					0.2				
	0.3	FILLING - grey clayey gravelly (crushed shale) silt filling with some fine to medium grained sand		A	0.5				
					0.6				
	1			A	1.0				1
					1.1				
79	1.9	FILLING - orange clay filling with trace fine to medium grained sand							2
	2.1	FILLING - brown and grey gravelly (very low to low strength shale) clayey silt filling							
	2.3	FILLING - concrete filling							
	2.5	FILLING - brown grey and orange gravelly silty sandy clay filling		A	2.5				
78	3				2.6				3
	3.1	SILTY CLAY - red brown silty clay with trace rootlets - becoming lighter with depth							
	3.7	SILTY SANDY CLAY - light grey to yellow silty sandy clay							
77	4								4
	4.1	SHALE - extremely low strength, extremely weathered, white grey shale (weathered bedrock)							
	4.5	Bore discontinued at 4.5m limit of investigation							
76	5								5
75	6								6
74									

RIG: Gemco 210B **DRILLER:** P Boers **LOGGED:** BAH **CASING:**

TYPE OF BORING: 100mm solid flight auger and TC-bit

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 81.2 m AHD
EASTING: 297415
NORTHING: 6227034
DIP/AZIMUTH: 90°/--

BORE No: BH140
PROJECT No: 34275.02
DATE: 31/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
81	0	FILLING - brown and grey gravelly silty clay with some fine to coarse grained (ironstone and shale) gravel with a few larger cobbles (50mm), mc<pl		E	0.2				
				D	0.5				
	1			E	1.0				
80		- becoming orange brown mottled grey and brown, large (50mm) igneous and shale gravel							
	2								
79	2.5	Bore discontinued at 2.5m limit of investigation		E	2.5				
	3								
78									
	4								
77									
	5								
76									
	6								
75									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates taken with handheld Garmin GPS60

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.2 m AHD
EASTING: 297399
NORTHING: 6227043
DIP/AZIMUTH: 90°/--

BORE No: BH141
PROJECT No: 34275.02
DATE: 31/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0	FILLING - brown and grey gravelly silty clay with some fine to coarse grained (ironstone and shale) gravel with a few larger cobbles (50mm), mc<pl		E*	0.2				
				E	0.5				
	1	- becoming grey to light grey		E	1.0				
81									
	2	- becoming light brown, large clusters of >50mm shale, angular							
80	2.5	Bore discontinued at 2.5m limit of investigation		E	2.5				
	3								
79									
	4								
78									
	5								
77									
	6								
76									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. E* = BD103 collected; Coordinates taken with handheld Garmin GPS60

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.7 m AHD
EASTING: 297409
NORTHING: 6227057
DIP/AZIMUTH: 90°/--

BORE No: BH142
PROJECT No: 34275.02
DATE: 31/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0	FILLING - brown and grey gravelly silty clay with some fine to coarse grained (ironstone and shale) gravel with a few larger cobbles (50mm), mc<pl		E	0.2				
				E	0.5				
		- becoming brown							
81	1			E	1.0				
		- becoming light brown							
	2								
	2.5	Bore discontinued at 2.5m limit of investigation		E	2.5				
80	3								
79	4								
78	5								
77	6								
76									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates taken with handheld Garmin GPS60

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.7 m AHD
EASTING: 297400
NORTHING: 6227096
DIP/AZIMUTH: 90°/--

BORE No: BH143
PROJECT No: 34275.02
DATE: 31/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0	FILLING - brown and grey gravelly silty clay with some fine to coarse grained (ironstone and shale) gravel with a few larger cobbles (50mm), mc<pl		E	0.2				
				E	0.5				
	1			E	1.0				
81	2								
	2.5	Bore discontinued at 2.5m limit of investigation		E	2.5				
80	3								
79	4								
78	5								
77	6								
76									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates taken with handheld Garmin GPS60

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.6 m AHD
EASTING: 297425
NORTHING: 6227100
DIP/AZIMUTH: 90°/--

BORE No: BH144
PROJECT No: 34275.02
DATE: 31/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0	FILLING - brown and grey gravelly silty clay with some fine to coarse grained (ironstone and shale) gravel with a few larger cobbles (50mm), mc<pl		E	0.2				
				E	0.5				
	1			E	1.0				
81		- becoming soft, very moist, mc>pl							
	2								
	2.5	Bore discontinued at 2.5m limit of investigation		E	2.5				
80	3								
79	4								
78	5								
77	6								
76									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates taken with handheld Garmin GPS60

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.3 m AHD
EASTING: 297409
NORTHING: 6227115
DIP/AZIMUTH: 90°/--

BORE No: BH145
PROJECT No: 34275.02
DATE: 31/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0	FILLING - brown and grey gravelly silty clay with some fine to coarse grained (ironstone and shale) gravel with a few larger cobbles (50mm), mc<pl		E*	0.2				
				E	0.5				
	1			E	1.0				
81									
	2	- becoming moist, mc>pl							
80	2.5	Bore discontinued at 2.5m limit of investigation		E	2.5				
	3								
79									
	4								
78									
	5								
77									
	6								
76									

RIG: Kubota KX41-3V mini-excavator **DRILLER:** J Boers **LOGGED:** DJM **CASING:**

TYPE OF BORING: Power auger (TC-bit)

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. E* = BD104 collected; Coordinates taken with handheld Garmin GPS60

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.6 m AHD
EASTING: 297447
NORTHING: 6227096
DIP/AZIMUTH: 90°/--

BORE No: MW104
PROJECT No: 34275.02
DATE: 24/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
79	0.15	ASPHALT - asphalt over roadbase							bentonite capping
		ROADBASE - grey roadbase		A	0.4 0.5				casing
	0.8	SANDY CLAY - firm, orange sandy clay, moist		A	1.0 1.1				
78	1.7	- light brown orange mottled from 1.2m SANDY CLAY - stiff, grey very sandy clay, dry (probable weathered bedrock)		A	1.9 2.0				
77	2.7	SHALE - low strength, grey shale		A	2.5 2.6				
76		- auger discontinued at 3.4m							sand
75									
74									
73									screen
72									
71									
70									
69	10.0	Bore discontinued at 10.0m limit of investigation							

RIG: Gemco 210B **DRILLER:** J Boers **LOGGED:** BAH **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit to 3.4m, wash coring to 10.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. A* = BD4/230112 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.6 m AHD
EASTING: 297450
NORTHING: 6227107
DIP/AZIMUTH: 90°/--

BORE No: MW105
PROJECT No: 34275.02
DATE: 24/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
79	0.15	ASPHALT - 15mm thick asphalt							bentonite capping
	0.4	ROADBASE - grey roadbase		E	0.3 - 0.4				casing
	0.7	CLAY - grey black clay, damp to moist		E	0.5 - 0.6				
	1	CLAY - firm, dark orange red clay		E	1.0 - 1.1				
	1.2	SANDY CLAY - light orange brown mottled grey sandy clay		E	1.5 - 1.6				
78	1.6	SHALE - extremely low strength, extremely weathered, light grey shale (weathered bedrock)							
	1.8	SHALE - very low to low strength, grey shale		E	2.0 - 2.1				
	2			E	2.5 - 2.6				
77	3	- low strength below 2.85m							
76	4								
75	5	- auger discontinued at 5.0m							sand
74	6								
73	7								screen
72	8								
71	9								
70	10	10.0 Bore discontinued at 10.0m limit of investigation							
69									

RIG: Gemco 210B **DRILLER:** J Boers **LOGGED:** BAH **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit to 5.0m, wash coring to 10.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure
PROJECT: Phase 2 Contamination Assessment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.4 m AHD
EASTING: 297456
NORTHING: 6227104
DIP/AZIMUTH: 90°/--

BORE No: MW106
PROJECT No: 34275.02
DATE: 24/1/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
79	0.15	ASPHALT							bentonite capping
		ROADBASE - grey roadbase		E	0.4 0.5				casing
	0.6	CLAY - orange mottled grey slightly sandy clay							
	1			E	1.0 1.1				
78	1.25	SHALE - very low strength, grey shale		E	1.5 1.6				
	2			A*	2.0 2.1				
77				A	2.5 2.6				
		- low strength below 2.6m							
	3			A	3.0 3.1				sand
76									
	4	- moist to wet at 4.0m							
75				A	3.5 3.6				
	5								screen
74		- saturated at 5.4m						▼	
	6								
73	6.4	Bore discontinued at 6.4m limit of investigation							
	7								
72									
	8								
71									
	9								
70									
	10								
69									

RIG: Gemco 210B **DRILLER:** J Boers **LOGGED:** BAH **CASING:**

TYPE OF BORING: 150mm solid flight auger and TC-bit

WATER OBSERVATIONS: Free groundwater observed at 5.4m whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. A* = BD1/250112 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 81.9 mAHD
EASTING: 297401
NORTHING: 6227040
DIP/AZIMUTH: 90°/--

BORE No: 1
PROJECT No: 34275
DATE: 17 - 18/3/2011
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
81	0	FILLING - grey brown mottled orange brown clayey fine to coarse grained siltstone gravel filling with some gravelly clay bands, dry							A			
									A			
	1								A			
									S			9,10,8 N = 18
80	2											
									S			3,5,3 N = 8
79	3											
	3.7	SILTY CLAY - hard, grey brown silty clay with trace fine grained ironstone gravel and ash, mc>pl							S			3,9,8 N = 17
78	4								S			pp = 430->600
	4.3	SILTY CLAY - hard, red brown mottled grey silty clay with trace fine grained ironstone gravel and rootlets, mc>pl										
77	4.9	SHALE - extremely low strength, extremely weathered, grey shale										
	5	- coring started at 5.3m										
	5.3							5.3m: CORE LOSS: 260mm	C	0		
	5.56	SILTSTONE - medium strength, fresh stained, highly fractured, dark grey siltstone						5.64m: B, 0-5°, pl, sm 5.9m: Cs, 0-10°, pl,	C	100		PL(A) = 0.41
76												

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 4.0m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 95% return, Groundwater observed at 6.85m on 22/3/11

REMARKS: Screen 6.7 - 9.7m, casing 0 - 6.7m, sand 5.7 - 9.7m, bentonite 4.5 - 5.7m, backfilled and finished with concrete and gatic

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 81.9 mAHD
EASTING: 297401
NORTHING: 6227040
DIP/AZIMUTH: 90°/--

BORE No: 1
PROJECT No: 34275
DATE: 17 - 18/3/2011
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
			EW HW MW SW FS FR		Ex Low / Very Low / Low / Medium / High / Very High / Ex High		0.01 / 0.05 / 0.10 / 0.50 / 1.00	B - Bedding J - Joint S - Shear F - Fault				
75	7	SILTSTONE - medium strength, fresh stained, highly fractured, dark grey siltstone *(continued)*						13mm thick 6.04m: Ds, 0°, pl, 4mm thick 6.14m: 2xJ, 65°, un, st 6.28m: J, sv, un, sm	C	100		PL(A) = 0.58
						22-03-11		6.6m: B, 0-5°, pl, sm 6.66m: B, 0-5°, pl, sm 6.73m: Cs, 0-35°, 36mm thick 6.8m: J, sv, un, ro 6.95m: J, 45°, pl, ro, clay vn 7m: J, 55°m pl, ro 7.05m: Cs, 0-55°, 36mm thick 7.14m: J, 60°, pl, ro, st 7.23m: Ds, 10°, pl, 4mm thick 7.25m: Cs, 10°, pl, 12mm thick 7.28m: B, 20°, pl, wm, clay inf 3mm thick 7.35m: B, 0-5°, pl, clay inf 6mm thick 7.42m: B, 15°, pl, sm, clay inf 3mm thick	C	91	9	
74	8	- becoming slightly fractured below 8.26m						7.6m: J, 60°, p, ro, clay co 7.64m: J, 80°, pl, sm, fe stn 7.71m: J, 40°, pl, sm, fe stn 7.79m: J, 70°, pl, sm, fe stn				PL(A) = 0.7
73	8.95 9	SILTSTONE - medium strength, fresh stained, slightly fractured, dark grey siltstone with some light gray laminae bedding at 0-10°						8.05m: B, h, pl, sm, fe stn 8.23m: B, 0-5°, pl, sm vn 8.26m: J, 30°, pl, sm 8.42m: J, 25°, pl, sm 9.35m: J, 70-80°, un, ro, st	C	100	100	PL(A) = 0.58 PL(A) = 0.41
72	9.7 10	Bore discontinued at 9.7m										
71	11											
70												

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 4.0m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 95% return, Groundwater observed at 6.85m on 22/3/11

REMARKS: Screen 6.7 - 9.7m, casing 0 - 6.7m, sand 5.7 - 9.7m, bentonite 4.5 - 5.7m, backfilled and finished with concrete and gatic

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 81.8 mAHD
EASTING: 297386
NORTHING: 6227049
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 34275
DATE: 17/3/2011
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
81	0	FILLING - brown grey silty fine to coarse grained siltstone gravel with trace concrete fragments and fine to coarse grained sand, dry							A			
									A			
	1								S			17,20/150mm,- refusal
80	2	- becoming moist below 2.0m										
79	3								S			5,6,7 N = 13
	3.6	FILLING - brown fine to coarse grained siltstone gravelly clay with some fine to coarse grained sand, mc>pl										
78	4								S			3,3,6 N = 9
77	5											
	5.0	SILTY CLAY - hard, red brown mottled light grey silty clay							S			4,8,16 N = 24 pp > 600
76												

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 4.0m

TYPE OF BORING: 100mm diameter SFA to 6.5m, NMLC to 11.7m

WATER OBSERVATIONS: No free groundwater observed whilst augering, 95% return

REMARKS:

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 81.8 mAHD
EASTING: 297386
NORTHING: 6227049
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 34275
DATE: 17/3/2011
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	6.0	SHALE - extremely low strength, extremely weathered, grey mottled red brown shale										
								6.5m: CORE LOSS: 250mm	C	0		
75	6.75	SILTSTONE - medium strength, moderately weathered, fractured, dark grey siltstone						6.75m: Cs, h, 30mm thick 6.81m: h, sm 6.85m: Ds, h, 3mm thick 6.91m: B, 5°, pl, un, sm 6.94m: Ds, h, 2mm thick 7.03m: Cs, h, 2mm thick 7.07m: J, 80°, pl, sm, fe stn 7.13m: J, 75°, pl, sm, fe stn 7.27m: B, 5°, pl, sm, clay inf 2mm thick 7.29m: B, h, pl, sm 7.31m: Cs, h, 8mm thick 7.35m: J, 40°, pl, sm, st 7.43m: J, sv, un, ro 7.48m: Cs, h, 10mm thick 7.57m: Ds, h, un, sm, 12mm thick 7.65m: Ds, h, 33mm thick 7.76m: Cs, h, 30mm thick 7.89m: J, 45°, pl, sm, st 7.92m: Ds, h, pl, 3mm thick 7.95m: Cs, h, un, 3mm thick 7.96m: J, 55°, pl, sm 8.23m: J, 20°, pl, sm 8.28m: Ds, h, 13mm thick 8.35m: J, 30°, pl, sm, fe stn 8.4m: J, 25-75°, un, sm 8.53m: 2xJ, 70-80°, st, ro	C	89	44	PL(A) = 0.65
74	7											
	8	- becoming unbroken below 8.53m										PL(A) = 0.49
73	9								C	100	100	
	9.18	SILTSTONE - medium strength, fresh stained, unbroken, dark grey siltstone with light grey laminae bedded at 0 - 5°										PL(A) = 0.91 PL(A) = 0.54
72	10											
		- becoming high strength below 10.4										PL(A) = 2.26
71	11											
	11.7	Bore discontinued at 11.7m										PL(A) = 1.31
70												

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 4.0m

TYPE OF BORING: 100mm diameter SFA to 6.5m, NMLC to 11.7m

WATER OBSERVATIONS: No free groundwater observed whilst augering, 95% return

REMARKS:

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.7 mAHD
EASTING: 297438
NORTHING: 6227140
DIP/AZIMUTH: 90°/--

BORE No: 3
PROJECT No: 34275
DATE: 18/3/2011
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
79	0	FILLING - brown silty fine to coarse grained shale gravel filling with some gravelly clay bands, dry							A			
									A			
	1								S			6,17,18 N = 35
78	2											
	2.5	SILTY CLAY - hard, red brown silty clay with trace coarse grained sand, mc~pl							S			10,13,19 N = 32 pp > 600
77	3					22-03-11						
76	4											
	4.0							4m: CORE LOSS: 200mm	C	0		
	4.2							4.2m: Ds, 0°, 40mm				
	4.29	SHALE - extremely low strength, extremely weathered, light grey shale with some siltstone bands						4.33m: B, 0°, pl, sm 4.35m: B, 0°. pl, sm, fe stn 4.4m: B, 5°, pl, sm, fe stn 4.45m: J, 30°, pl, sm, fe stn 4.53m: J, 20°, pl, sm, fe stn 4.62m: B, 0-5°, pl, sm 4.64m: B, 0°, pl, sm 4.67m: B, 0°, un, sm 4.76m: B, 0°, un, sm fe stn 4.78m: B, 0°, un sm, fe stn 4.8m: J, 20°, pl, sm, fe stn 4.85m: B, 10°, pl, sm, fe stn	C	19		PL(A) = 0.43
75	5	SILTSTONE - medium strength, fresh stained, fractured, dark grey siltstone										
74									C	91	83	

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 2.5m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 95% return, Groundwater observed at 3.60m on 22/3/11

REMARKS: Screen 6.1 - 9.1m, casing 0 - 6.1m, gravel 5.5 - 9.1m, bentonite 4.0 - 5.5m, backfilled and finished with concrete and gatic

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.7 mAHD
EASTING: 297438
NORTHING: 6227140
DIP/AZIMUTH: 90°/--

BORE No: 3
PROJECT No: 34275
DATE: 18/3/2011
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
73	7	SILTSTONE - medium strength, fresh stained, fractured, dark grey siltstone *(continued)*						4.86m: B, 0°, pl, sm, fe stn 5m: J, 25°, pl, sm, fe stn 5.08m: Cs, 0-5°, pl, 3mm thick 5.1m: J, 30°, un, sm, fe stn 5.2m: J, 50°, pl, st, fe stn	C	91	83	PL(A) = 0.43
72	8	- becoming slightly fractured below 6.71m						5.27m: J, 25°, pl, sm, st 5.35m: 2xJ, 15-35°, pl, sm, st 5.39m: Cs, 0°, pl, 8mm thick 5.51m: J, 50°, pl, sm, fe stn 5.63m: J, 15°, pl, ro 5.81m: J, 30°, pl, ro, fe stn 5.84m: J, 60°, pl, sm, fe stn 5.92m: Cs, 0°, pl, 36mm thick 5.96m: 3xJ, sv, pl, sm, fe stn 6.07m: J, 30°, pl, ro 6.09m: J, sv, pl, sm, partially he	C	100	95	PL(A) = 0.32
71	9	- becoming unbroken below 8.3m						6.65m: B, 0-5°, pl, sm, fe stn 6.68m: B, 0-5°, pl, sm, fe stn 6.71m: B, 0-5°, pl, sm, fe stn 6.96m: Cs, 0-10°, 17mm thick 7.08m: B, 0-5°, pl, ro 7.64m: 2xJ, 30°, pl, sm 7.72m: J, 70°, pl, sm 8.22m: J, 40°, pl, sm 8.3m: J, 40°, pl, sm	C	100	100	PL(A) = 0.64 PL(A) = 0.74
70	9.1	Bore discontinued at 9.1m										
69	10											
68	11											

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 2.5m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 95% return, Groundwater observed at 3.60m on 22/3/11

REMARKS: Screen 6.1 - 9.1m, casing 0 - 6.1m, gravel 5.5 - 9.1m, bentonite 4.0 - 5.5m, backfilled and finished with concrete and gatic

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 83.1 mAHD
EASTING: 297445
NORTHING: 6227088
DIP/AZIMUTH: 90°/--

BORE No: 4
PROJECT No: 34275
DATE: 21/3/2011
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
83	0.0	FILLING - brown silty fine to coarse grained sandy fine to coarse grained igneous gravel filling, moist							A			
	0.4	FILLING - brown fine to coarse grained igneous and siltstone gravelly clay filling with trace steel, brick and concrete fragments, mc~pl							A			
82	1								S			6,5,7 N = 12
									A			
81	2								S			8,13,14 N = 27
80	3											
	3.8	SILTY CLAY - hard, red brown mottled light grey silty clay with trace rootlets, mc>pl							S			4,8,12 N = 20
79	4											
	4.5	SHALE - extremely low strength extremely weathered, light grey shale with some iron indurated bands						4.55m: B, h. pl, ro fe stn 4.66m: B, h, pl, ro, fe stn 4.67m: B, h, pl, ro, fe stn 4.86m: J, 5°, pl, sm, fe stn 4.92m: J, 40°, pl, sm, cln 5.04m: Cs, h, 50mm thick 5.12m: J, 55°, pl, sm, clay co 5.22m: B, h, pl, ro, fe stn 5.25m: Ds, h, pl, 5mm thick	C	100	53	PL(A) = 1.64
	4.85	SILTSTONE - medium strength, highly weathered, fractured, dark grey siltstone with some iron indurated bands										
78	5								C	0		

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 2.5m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 90% return at 4.5m, 70% at 5.5m

REMARKS:

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 83.1 mAHD
EASTING: 297445
NORTHING: 6227088
DIP/AZIMUTH: 90°/--

BORE No: 4
PROJECT No: 34275
DATE: 21/3/2011
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
77								5.32m: B, sh, pl, st, fe stn	C	0		
	6.2	SILTSTONE - medium strength, slightly weathered, fractured, dark grey siltstone with some iron indurated bands						5.39m: B, 5°, pl, sm, fe stn 5.4m: B, 5°, pl, sm, fe stn 5.41m: B, 5°, pl, sm, fe stn 5.45m: Ds, h, pl, 16mm thick 5.5m: J, 45°, pl, sm, clay inf 8mm thick 5.6m: Cs, h, p, 70mm thick 5.7m: Ds, h, 190mm thick 5.9m: CORE LOSS: 300mm				
76	7	- becoming slightly fractured below 6.44m						6.26m: Cs, h, pl, 60mm thick 6.32m: Cs, h, pl, 20mm thick 6.34m: Cs, h, pl, 20mm thick 6.36m: B, 20°, pl, sm, fe stn 6.37m: B, 20°, pl, sm, fe stn 6.38m: Cs, 20°, pl, 8mm thick 6.44m: Cs, h, pl, 40mm thick 7.59m: Cs, 0-20°, pl, sm, clay inf 1-6mm thick	C	97	81	PL(A) = 0.61
75	8	- becoming fractured below 7.86m										PL(A) = 0.61
	8.78	Bore discontinued at 8.78m						7.86m: Ds, 0-15°, 70mm thick 7.95m: J, h-v, cu, sm, fe stn 8m: Ds, h, pl, 12mm thick 8.07m: Ds, 0-20°, un, 12mm thick 8.11m: B, 10°, pl, sm, fe stn 8.25m: J, 70°, pl, sm, fe stn 8.41m: J, 80°, pl, sm, fe stn 8.62m: Cs, h, pl, 15mm thick				
74	9											
73	10											
72	11											

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 2.5m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 90% return at 4.5m, 70% at 5.5m

REMARKS:

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.1 mAHD
EASTING: 297420
NORTHING: 6227112
DIP/AZIMUTH: 90°/--

BORE No: 5
PROJECT No: 34275
DATE: 22/3/2011
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
82		FILLING - brown fine to coarse grained shale and igneous gravelly clay filling with some grey bands, mc>pl							A			
		- becoming mc<pl below 0.4m							A			
81	1								A			
									S			5,5,7 N = 12
80	2								A			
									S			11,11,14 N = 25
79	3											
78	4								S			13,13,17 N = 30
	4.9	SHALE - extremely low strength, extremely weathered, light grey shale with grey very low strength bands										
77	5											
	5.65							5.65m: CORE LOSS: 80mm	C	0		
	5.73	SILTSTONE - very low to low strength, moderately weathered, fractured, dark grey siltstone						5.73m: J, sv, pl, sm 5.89m: J, 65°, pl, sm	C	97	63	

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 2.5m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 70% return at 5.65m

REMARKS:

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.1 mAHD
EASTING: 297420
NORTHING: 6227112
DIP/AZIMUTH: 90°/--

BORE No: 5
PROJECT No: 34275
DATE: 22/3/2011
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
76		SILTSTONE - very low to low strength, moderately weathered, fractured, dark grey siltstone *(continued)*						6.02m: Cs, h, pl, 3mm thick 6.07m: Cs, h, pl, 4mm thick 6.14m: Cs, h, pl, 40mm thick 6.21m: Cs, h, pl, 10mm thick 6.27m: J, sv, pl, sm 6.34m: B, sh, pl, ro, fe stn 6.35m: Cs, h, pl, 56mm thick 6.42m: Cs, h, pl, 4mm thick 6.45m: Ds, h, pl, 8mm thicl 6.57m: B, sh, pl, sm, fe stn 6.61m: Ds, sh, pl, 18mm thick 6.67m: J, 35°, pl, sm, fe stn 6.71m: Ds, sh, un, 25mm thick 6.73m: J, h-v, cu, sm, fe stn 6.74m: J, h-v, cu, sm, fe stn 6.81m: Ds, h, pl, 40mm thick	C	97	63	PL(A) = 0.4
75	7											
	7.24	SILTSTONE - medium strength, fresh stained, fractured, dark grey siltstone										
74	8											
		- becoming slightly fractured below 8.54m						6.85m: Cs, sh, pl, 30mm thick 6.96m: J, 30°, pl, sm, fe stn 7m: J, sv, un, sm, cln 7.08m: J, 2v, ir, sm, fe stn 7.18m: Ds, sh, pl, 26mm thick 7.21m: J, 45°, un, sm, fe stn 7.56m: J, 30°, pl, sm, fe stn 7.62m: J, 45°, un, sm 7.65m: J, 45°, un, sm 7.66m: J, 75°, un, sm 7.7m: Ds, h pl, 4mm thick	C	100	100	PL(A) = 0.43 PL(A) = 0.36 PL(A) = 0.17
73	9											
72	10 10.0	Bore discontinued at 10.0m						7.98m: J, 20°, pl, sm, fe stn 8.32m: Cs, sh, pl, 12mm thick 8.47m: Cs, sh, pl, 16mm thick 8.54m: J, sv, pl, ro, fe stn 9.1m: B, sh, un, sm, fe stn 9.32m: B, sh, pl, sm, fe stn 9.68m: Cs, sh, pl, 10mm thick				
71	11											

RIG: Bobcat **DRILLER:** SY **LOGGED:** TOM **CASING:** HW to 2.5m

TYPE OF BORING: NMLC

WATER OBSERVATIONS: No free groundwater observed whilst augering, 70% return at 5.65m

REMARKS:

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 76.2 mAHD
EASTING: 297454
NORTHING: 6227193
DIP/AZIMUTH: 90°/--

BORE No: 27
PROJECT No: 34275
DATE: 29/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
76	0.05	FILLING - brown silty fine to coarse grained sandy fine to coarse grained igneous gravel with concrete and brick fragments, dry							
	0.4	SILT - brown slightly fine to coarse grained sandy silt, mc~pl							
		SILTY CLAY - very stiff to hard, red brown silty clay, mc>pl		A	0.5		pp = 320-420		
		- becoming very stiff, red brown mottled light grey below 0.8m							
75	1			A	1.0		pp = 320-380		1
		- becoming dark red brown below 1.2m							
				A	1.5				
	1.6	Bore discontinued at 1.6m - target depth reached							
74	2								2
73	3								3
72	4								4
71	5								5

RIG: Kubota KX41-3V **DRILLER:** JB **LOGGED:** TOM **CASING:** N/A

TYPE OF BORING: 150mm diameter SFA

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 77.9 mAHD
EASTING: 297490
NORTHING: 6227176
DIP/AZIMUTH: 90°/--

BORE No: 28
PROJECT No: 34275
DATE: 30/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
77.9	0	FILLING - grey silty, fine to coarse grained sandy, fine to coarse grained igneous gravel (roadbase) filling with some concrete fragments, dry							
	0.4	SILTY CLAY - hard, red brown silty clay, mc>pl		A	0.5		pp > 600		
77	1			A	1.0		pp > 600		1
	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5				
76	2								2
75	3								3
74	4								4
73	5								5
72									

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Kubota KX41-3V **DRILLER:** JB **LOGGED:** TOM **CASING:** N/A

TYPE OF BORING: 150mm diameter SFA

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 78.8 mAHD
EASTING: 297462
NORTHING: 6227160
DIP/AZIMUTH: 90°/--

BORE No: 29
PROJECT No: 34275
DATE: 30/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
78	0.2	FILLING - grey brown silty, fine to coarse grained sandy, fine to coarse grained igneous gravel (roadbase) filling with some concrete fragments, dry							
		FILLING - brown silty fine to coarse grained shale gravel filling with some fine to coarse grained sand, moist		A	0.5				
		- becoming dark grey below 0.6m							
	1			A	1.0				1
	1.1	SILTY CLAY - hard, red brown silty clay, mc>pl							
	1.5			A	1.5		pp > 600		
		Bore discontinued at 1.5m							
77		- target depth reached							
	2								2
76									
	3								3
75									
	4								4
74									
	5								5
73									

RIG: Kubota KX41-3V **DRILLER:** JB **LOGGED:** TOM **CASING:** N/A

TYPE OF BORING: 150mm diameter SFA

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 79.6 mAHD
EASTING: 297517
NORTHING: 6227184
DIP/AZIMUTH: 90°/--

BORE No: 30
PROJECT No: 34275
DATE: 30/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
79	0	FILLING - brown silty clayey, fine to coarse grained shale gravel filling, moist							
	1.2	SILTY CLAY - very stiff, mottled light grey and red brown silty clay, mc>pl							
78	1.5	Bore discontinued at 1.5m - target depth reached		A	1.5		pp = 260-280		
77	2								
76	3								
75	4								
74	5								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Kubota KX41-3V **DRILLER:** JB **LOGGED:** TOM **CASING:** N/A

TYPE OF BORING: 150mm diameter SFA

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 76.8 mAHD
EASTING: 297475
NORTHING: 6227221
DIP/AZIMUTH: 90°/--

BORE No: 35
PROJECT No: 34275
DATE: 30/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
76	0	FILLING - dark brown silty clay filling with fine to coarse grained shale gravel and some concrete fragments and fine to coarse grained sand and trace rootlets, mc>pl							
				B	0.5				
	1				0.7				1
	1.2	SILTY CLAY - hard, mottled light grey and orange brown silty clay, mc~pl							
	1.6	Bore discontinued at 1.6m - target depth reached		A	1.6		pp = 430->600		
75	2								2
74	3								3
73	4								4
72	5								5
71									

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Kubota KX41-3V **DRILLER:** JB **LOGGED:** TOM **CASING:** N/A

TYPE OF BORING: 150mm diameter SFA

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 83 mAHD
EASTING: 297544
NORTHING: 6227093
DIP/AZIMUTH: 90°/--

BORE No: 38
PROJECT No: 34275
DATE: 30/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
83	0.03	ASPHALTIC CONCRETE - 30mm thick							
	0.1								
	0.2	FILLING - green grey silty, fine to coarse grained sandy fine to medium grained igneous gravel (roadbase) filling, moist							
		FILLING - light brown silty, fine to coarse grained sandy fine to coarse grained sandstone gravel (crushed sandstone) filling, moist		A	0.5		pp = 160-180		
	0.8	SHALY CLAY - stiff, light grey mottled orange brown shaly clay, mc>pl							
82	1	SHALE - extremely low strength, extremely weathered, light grey shale with dark grey low strength bands		A	1.0				1
		- becoming low strength, slightly weathered, with some light grey extremely low strength shale below 1.6m							
81	2			A	2.0				2
	2.9	Bore discontinued at 2.9m							
80	3	- TC-bit refusal on low strength shale		A	3.0				3
79	4								4
78	5								5

RIG: Kubota KX41-3V **DRILLER:** JB **LOGGED:** TOM **CASING:** N/A

TYPE OF BORING: 150mm diameter SFA

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Health Infrastructure - NSW Health
PROJECT: Campbelltown Hospital Redevelopment
LOCATION: Campbelltown Hospital
Therry Road, Campbelltown

SURFACE LEVEL: 82.5 mAHD
EASTING: 297507
NORTHING: 6227094
DIP/AZIMUTH: 90°/--

BORE No: 39
PROJECT No: 34275
DATE: 30/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
82	0	FILLING - brown grey clayey, fine to coarse grained shale gravel filling with some fine to coarse grained sand, moist		A	0.5				
81	1			A	1.5				
80	2			A	2.0				
	2.6	Bore discontinued at 2.6m - TC-bit refusal on suspected shale bedrock		A	2.6				
79	3								
78	4								
77	5								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Kubota KX41-3V **DRILLER:** JB **LOGGED:** TOM **CASING:** N/A

TYPE OF BORING: 150mm diameter SFA

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SURVEY DATUM: MGA94

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

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Geotechnics | Environment | Groundwater

Groundwater Field Sheet

	Project Details / Conditions				
Project Name	Phase 2 Contamination Assessment				
Location	Campbelltown Hospital, Therry Road, Campbelltown				
Project Number	34275.02				
	Bore Installation Details				
Date/Time	24/01/2012				
Bore / Standpipe ID	MW104				
Relative Level					
Groundwater Level					
Bore Depth					
Installed By	BAH				
	Bore Development Details				
Date/Time	24/01/2012				
Groundwater Level	At surface (from drilling)				
Estimated Bore Volume					
Total Volume Purged	Approx. 100 L (until almost dry)				
Equipment	Bailer, pump				
Purged By	BAH				
	Bore Purge Details				
Date/Time	31/01/2012				
Groundwater Level	2.00 m bgl				
Estimated Bore Volume					
Total Volume Purged					
Equipment	Micro purge				
Purged By	BAH				
	Low / Flow / Purge Testing				
	Water Quality Parameters				
Volume/Time	DO (ppm)	Cond. (µs/cm)	pH	Redox (mV)	Temp
10:09	4.40	5.52	6.66	55	27.3
10:11	5.29	6.01	6.47	60	26.2
10:13	5.27	6.24	6.39	62	25.6
10:15	5.25	6.19	6.33	62	25.1
10:17	5.20	6.16	6.28	63	24.8
	Groundwater Sampling				
Date/Time	31/01/2012 11:20 am				
Weather Conditions	Sunny				
Sample ID	MW104/310112				
Sample Appearance	Brown, cloudy				
Filtration performed	N/A				
QA/QC Samples	Yes, BD1/310112				
Sampling Containers	2 x 1 L amber				
Comments / Observations					
Sampled By	BAH				

Douglas Partners
Geotechnics | Environment | Groundwater

Groundwater Field Sheet

	Project Details / Conditions				
Project Name	Phase 2 Contamination Assessment				
Location	Campbelltown Hospital, Therry Road, Campbelltown				
Project Number	34275.02				
	Bore Installation Details				
Date/Time	24/01/2012				
Bore / Standpipe ID	MW105				
Relative Level					
Groundwater Level	2.12 mbgl				
Bore Depth					
Installed By	BAH				
	Bore Development Details				
Date/Time	30/01/2012				
Groundwater Level	2.12 mbgl				
Estimated Bore Volume					
Total Volume Purged	Approx. 55 L (dry)				
Equipment	Bailer				
Purged By	BAH				
	Bore Purge Details				
Date/Time	31/01/2012				
Groundwater Level	2.82 m bgl				
Estimated Bore Volume					
Total Volume Purged					
Equipment	Micro purge				
Purged By	BAH				
	Low / Flow / Purge Testing				
	Water Quality Parameters				
Volume/Time	DO (ppm)	Cond. (µs/cm)	pH	Redox (mV)	Temp
2:12	7.02	5.45	6.91	42	29.6
2:14	7.42	5.44	6.59	45	27.4
2:16	7.74	5.32	6.43	49	26.6
2:18	7.64	5.25	6.39	49	26.1
2:20	7.42	5.22	6.35	50	25.9
2:22	7.26	5.25	6.33	52	25.8
2:24	7.70	5.25	6.32	53	25.9
2:26	8.32	5.29	6.34	55	25.9
2:28	8.35	5.35	6.30	55	25.9
	Groundwater Sampling				
Date/Time	31/01/2012 2:25 pm				
Weather Conditions	Sunny				
Sample ID	MW105/310112				
Sample Appearance	Brown, cloudy				
Filtration performed	N/A				
QA/QC Samples	No				
Sampling Containers	1 L amber				
Comments / Observations					
Sampled By	BAH				

Douglas Partners
Geotechnics | Environment | Groundwater

Groundwater Field Sheet

	Project Details / Conditions				
Project Name	Phase 2 Contamination Assessment				
Location	Campbelltown Hospital, Therry Road, Campbelltown				
Project Number	34275.02				
	Bore Installation Details				
Date/Time	25/01/2012				
Bore / Standpipe ID	MW106				
Relative Level					
Groundwater Level	1.37 mbgl				
Bore Depth	6.22 m				
Installed By	BAH				
	Bore Development Details				
Date/Time	30/01/2012 1:20 pm				
Groundwater Level	1.37 mbgl				
Estimated Bore Volume	Approx. 50 L				
Total Volume Purged	140 - 150 L				
Equipment	Bailer				
Purged By	BAH				
	Bore Purge Details				
Date/Time	31/01/2012 9:00 am				
Groundwater Level	1.55 mbgl				
Estimated Bore Volume	N/A				
Total Volume Purged	N/A				
Equipment	Micro purge				
Purged By	BAH				
	Low / Flow / Purge Testing				
	Water Quality Parameters				
Volume/Time	DO (ppm)	Cond. (µs/cm)	pH	Redox (mV)	Temp
9:09	1.88	4.37	6.31	117	28.8
9:11	1.93	4.70	6.39	113	29.0
9:13	2.51	4.83	6.66	110	27.8
9:15	2.62	4.90	6.55	110	25.9
9:17	2.39	4.91	6.51	109	25.4
9:19	2.18	4.90	6.53	108	25.3
9:21	1.94	4.89	6.56	106	25.3
9:23	2.04	5.05	6.60	104	25.3
9:25	1.96	5.02	6.62	103	25.3
	Groundwater Sampling				
Date/Time	31/01/2012				
Weather Conditions	Sunny				
Sample ID	MW106/300112				
Sample Appearance	Grey, cloudy, silty				
Filtration performed	N/A				
QA/QC Samples	No				
Sampling Containers	1 L amber				
Comments / Observations					
Sampled By	BAH				

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 67099

Client:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange
NSW 2567

Attention: Michael Gol

Sample log in details:

Your Reference:	**34275.02, Campbelltown Hospital**		
No. of samples:	41 soils		
Date samples received / completed instructions received	03/01/12	/	03/01/12

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:	10/01/12	/	9/01/12
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:

Rhian Morgan
Reporting Supervisor

Tania Notaras
Manager

Paul Ching
Approved Signatory

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTRH & BTEX in Soil						
Our Reference:	UNITS	67099-1	67099-2	67099-3	67099-6	67099-9
Your Reference	----------	BH101/0.2	BH102/0.2	BH103/0.2	BH106/0.2	BH109/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
Date analysed	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	91	94	97	96	92

vTRH & BTEX in Soil						
Our Reference:	UNITS	67099-10	67099-13	67099-15	67099-16	67099-18
Your Reference	----------	BH110/0.2	BH112/0.5	BH114/0.2	BH115/0.2	BH117/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
Date analysed	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	100	95	102	100

vTRH & BTEX in Soil						
Our Reference:	UNITS	67099-19	67099-20	67099-22	67099-26	67099-28
Your Reference	----------	BH117/1.3	BH118/0.2	BH120/0.2	BH122/0.5	BH123/3.5
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
Date analysed	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	94	95	93	91

vTRH & BTEX in Soil						
Our Reference:	UNITS	67099-29	67099-30	67099-32	67099-33	67099-34
Your Reference	----------	BH124/0.2	BH124/3.0	BH125/1.5	BH126/0.2 (1.6)	BH127/0.2
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
Date analysed	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011	05/01/2011
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	95	95	91	88	94

vTRH & BTEX in Soil					
Our Reference:	UNITS	67099-36	67099-37	67099-39	67099-41
Your Reference	----------	BH127/3.1	BH128/0.5	BD2	BD6
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011
Date analysed	-	05/01/2011	05/01/2011	05/01/2011	05/01/2011
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	91	96	96	97

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	67099-1	67099-2	67099-3	67099-6	67099-9
Your Reference	----------	BH101/0.2	BH102/0.2	BH103/0.2	BH106/0.2	BH109/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	%	91	93	90	89	91

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	67099-10	67099-13	67099-15	67099-16	67099-18
Your Reference	----------	BH110/0.2	BH112/0.5	BH114/0.2	BH115/0.2	BH117/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	%	92	89	90	91	88

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	67099-19	67099-20	67099-22	67099-26	67099-28
Your Reference	----------	BH117/1.3	BH118/0.2	BH120/0.2	BH122/0.5	BH123/3.5
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	%	91	88	86	88	91

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	67099-29	67099-30	67099-32	67099-33	67099-34
Your Reference	----------	BH124/0.2	BH124/3.0	BH125/1.5	BH126/0.2 (1.6)	BH127/0.2
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	92	86	88	92

sTRH in Soil (C10-C36)					
Our Reference:	UNITS	67099-36	67099-37	67099-39	67099-41
Your Reference	----------	BH127/3.1	BH128/0.5	BD2	BD6
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	91	87	90	92

PAHs in Soil						
Our Reference:	UNITS	67099-1	67099-2	67099-3	67099-6	67099-9
Your Reference	----------	BH101/0.2	BH102/0.2	BH103/0.2	BH106/0.2	BH109/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	102	100	104	97	98

PAHs in Soil						
Our Reference:	UNITS	67099-10	67099-13	67099-15	67099-16	67099-18
Your Reference	----------	BH110/0.2	BH112/0.5	BH114/0.2	BH115/0.2	BH117/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	94	103	96	97	97

PAHs in Soil						
Our Reference:	UNITS	67099-19	67099-20	67099-22	67099-26	67099-28
Your Reference	----------	BH117/1.3	BH118/0.2	BH120/0.2	BH122/0.5	BH123/3.5
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	0.7	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.07	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	93	95	93	96	98

PAHs in Soil						
Our Reference:	UNITS	67099-29	67099-30	67099-32	67099-33	67099-34
Your Reference	----------	BH124/0.2	BH124/3.0	BH125/1.5	BH126/0.2 (1.6)	BH127/0.2
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	100	96	99	103	105

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	67099-36 BH127/3.1 23/12/2011 Soil	67099-37 BH128/0.5 23/12/2011 Soil	67099-38 BD1 23/12/2011 Soil	67099-40 BD3 23/12/2011 Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	105	101	103	99

Organochlorine Pesticides in soil						
Our Reference:	UNITS	67099-1	67099-4	67099-9	67099-10	67099-18
Your Reference	----------	BH101/0.2	BH104/0.2	BH109/0.2	BH110/0.2	BH117/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	%	98	96	95	102	78

Organochlorine Pesticides in soil					
Our Reference:	UNITS	67099-20	67099-23	67099-33	67099-34
Your Reference	----------	BH118/0.2	BH121/0.2	BH126/0.2 (1.6)	BH127/0.2
Date Sampled	----------	22/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	94	99	98

Organophosphorus Pesticides						
Our Reference:	UNITS	67099-1	67099-4	67099-9	67099-10	67099-18
Your Reference	----------	BH101/0.2	BH104/0.2	BH109/0.2	BH110/0.2	BH117/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	%	98	96	95	102	78

Organophosphorus Pesticides					
Our Reference:	UNITS	67099-20	67099-23	67099-33	67099-34
Your Reference	----------	BH118/0.2	BH121/0.2	BH126/0.2 (1.6)	BH127/0.2
Date Sampled	----------	22/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	94	99	98

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	67099-1 BH101/0.2 22/12/2011 Soil	67099-4 BH104/0.2 22/12/2011 Soil	67099-9 BH109/0.2 22/12/2011 Soil	67099-10 BH110/0.2 22/12/2011 Soil	67099-18 BH117/0.2 22/12/2011 Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
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	%	98	96	95	102	78

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	67099-20 BH118/0.2 22/12/2011 Soil	67099-23 BH121/0.2 23/12/2011 Soil	67099-33 BH126/0.2 (1.6) 23/12/2011 Soil	67099-34 BH127/0.2 23/12/2011 Soil
Date extracted	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	94	99	98

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-1	67099-2	67099-3	67099-4	67099-5
Your Reference	----------	BH101/0.2	BH102/0.2	BH103/0.2	BH104/0.2	BH105/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	6	5	7	8	10
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	15	14	20	19	17
Copper	mg/kg	26	28	23	23	40
Lead	mg/kg	34	36	38	31	30
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	20	21	17	9	13
Zinc	mg/kg	51	48	42	31	60

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-6	67099-7	67099-8	67099-9	67099-10
Your Reference	----------	BH106/0.2	BH107/0.2	BH108/0.2	BH109/0.2	BH110/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	9	7	7	8	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	15	16	14	14	16
Copper	mg/kg	37	31	35	26	37
Lead	mg/kg	27	31	30	36	25
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	15	15	12	13
Zinc	mg/kg	48	36	46	40	53

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-11	67099-12	67099-13	67099-14	67099-15
Your Reference	----------	BH111/0.2	BH112/0.2	BH112/0.5	BH113/0.2	BH114/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	5	<4	5	6	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	16	24	13	16	22
Copper	mg/kg	40	72	45	43	23
Lead	mg/kg	28	27	24	28	21
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	28	22	15	7
Zinc	mg/kg	63	53	59	51	21

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-16	67099-17	67099-18	67099-19	67099-20
Your Reference	----------	BH115/0.2	BH116/0.2	BH117/0.2	BH117/1.3	BH118/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	<4	6	5	8	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	24	13	8	4	13
Copper	mg/kg	37	38	40	29	24
Lead	mg/kg	7	28	24	28	27
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	45	18	27	21	5
Zinc	mg/kg	29	61	75	38	25

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-21	67099-22	67099-23	67099-24	67099-25
Your Reference	----------	BH119/0.2	BH120/0.2	BH121/0.2	BH121/1.0	BH122/0.2
Date Sampled	----------	22/12/2011	22/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	6	5	<4	4	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	16	12	9	9	9
Copper	mg/kg	28	37	38	36	37
Lead	mg/kg	28	29	22	26	24
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	14	15	24	20	11
Zinc	mg/kg	45	50	59	71	55

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-26	67099-27	67099-28	67099-29	67099-30
Your Reference	----------	BH122/0.5	BH123/0.2	BH123/3.5	BH124/0.2	BH124/3.0
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	4	4	4	6	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	18	6	16	10	16
Copper	mg/kg	39	50	40	36	57
Lead	mg/kg	27	30	28	26	22
Mercury	mg/kg	0.1	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	26	29	26	18	19
Zinc	mg/kg	69	99	210	67	220

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-31	67099-32	67099-33	67099-34	67099-35
Your Reference	----------	BH125/0.2	BH125/1.5	BH126/0.2 (1.6)	BH127/0.2	BH127/2.0
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	6	6	4	9	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	14	12	16	9	11
Copper	mg/kg	33	40	30	42	34
Lead	mg/kg	29	26	22	28	26
Mercury	mg/kg	1.5	<0.1	<0.1	<0.1	0.4
Nickel	mg/kg	22	13	10	19	18
Zinc	mg/kg	61	54	39	65	56

Acid Extractable metals in soil						
Our Reference:	UNITS	67099-36	67099-37	67099-38	67099-39	67099-40
Your Reference	----------	BH127/3.1	BH128/0.5	BD1	BD2	BD3
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/01/2012	05/01/2012	05/01/2012	05/01/2012	05/01/2012
Date analysed	-	06/01/2012	06/01/2012	06/01/2012	06/01/2012	06/01/2012
Arsenic	mg/kg	6	5	6	5	7
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	14	13	12	11	13
Copper	mg/kg	37	38	46	39	43
Lead	mg/kg	25	31	31	28	31
Mercury	mg/kg	0.1	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	23	17	21	20	17
Zinc	mg/kg	61	65	110	81	59

Acid Extractable metals in soil		
Our Reference:	UNITS	67099-41
Your Reference	----------	BD6
Date Sampled	----------	23/12/2011
Type of sample		Soil
Date digested	-	05/01/2012
Date analysed	-	06/01/2012
Arsenic	mg/kg	7
Cadmium	mg/kg	<0.5
Chromium	mg/kg	16
Copper	mg/kg	31
Lead	mg/kg	33
Mercury	mg/kg	<0.1
Nickel	mg/kg	16
Zinc	mg/kg	54

Moisture						
Our Reference:	UNITS	67099-1	67099-2	67099-3	67099-4	67099-5
Your Reference	----------	BH101/0.2	BH102/0.2	BH103/0.2	BH104/0.2	BH105/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	22	18	20	18	24

Moisture						
Our Reference:	UNITS	67099-6	67099-7	67099-8	67099-9	67099-10
Your Reference	----------	BH106/0.2	BH107/0.2	BH108/0.2	BH109/0.2	BH110/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	22	23	23	25	23

Moisture						
Our Reference:	UNITS	67099-11	67099-12	67099-13	67099-14	67099-15
Your Reference	----------	BH111/0.2	BH112/0.2	BH112/0.5	BH113/0.2	BH114/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	24	12	9.2	8.9	15

Moisture						
Our Reference:	UNITS	67099-16	67099-17	67099-18	67099-19	67099-20
Your Reference	----------	BH115/0.2	BH116/0.2	BH117/0.2	BH117/1.3	BH118/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	5.2	14	6.5	5.5	16

Moisture						
Our Reference:	UNITS	67099-21	67099-22	67099-23	67099-24	67099-25
Your Reference	----------	BH119/0.2	BH120/0.2	BH121/0.2	BH121/1.0	BH122/0.2
Date Sampled	----------	22/12/2011	22/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	16	15	13	9.5	13

Moisture						
Our Reference:	UNITS	67099-26	67099-27	67099-28	67099-29	67099-30
Your Reference	----------	BH122/0.5	BH123/0.2	BH123/3.5	BH124/0.2	BH124/3.0
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	13	9.1	17	9.2	16

Moisture						
Our Reference:	UNITS	67099-31	67099-32	67099-33	67099-34	67099-35
Your Reference	----------	BH125/0.2	BH125/1.5	BH126/0.2 (1.6)	BH127/0.2	BH127/2.0
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	15	16	21	11	14

Moisture						
Our Reference:	UNITS	67099-36	67099-37	67099-38	67099-39	67099-40
Your Reference	----------	BH127/3.1	BH128/0.5	BD1	BD2	BD3
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/01/2012	5/01/2012	5/01/2012	5/01/2012	5/01/2012
Date analysed	-	6/01/2012	6/01/2012	6/01/2012	6/01/2012	6/01/2012
Moisture	%	13	17	19	11	18

Moisture		
Our Reference:	UNITS	67099-41
Your Reference	----------	BD6
Date Sampled	----------	23/12/2011
Type of sample		Soil
Date prepared	-	5/01/2012
Date analysed	-	6/01/2012
Moisture	%	18

Asbestos ID - soils						
Our Reference:	UNITS	67099-1	67099-3	67099-6	67099-9	67099-11
Your Reference	----------	BH101/0.2	BH103/0.2	BH106/0.2	BH109/0.2	BH111/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	9/01/2012	9/01/2012	9/01/2012	9/01/2012	9/01/2012
Sample mass tested	g	Approx 50g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils						
Our Reference:	UNITS	67099-12	67099-14	67099-15	67099-16	67099-17
Your Reference	----------	BH112/0.2	BH113/0.2	BH114/0.2	BH115/0.2	BH116/0.2
Date Sampled	----------	22/12/2011	22/12/2011	22/12/2011	22/12/2011	22/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	9/01/2012	9/01/2012	9/01/2012	9/01/2012	9/01/2012
Sample mass tested	g	Approx 50g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils						
Our Reference:	UNITS	67099-18	67099-22	67099-24	67099-26	67099-28
Your Reference	----------	BH117/0.2	BH120/0.2	BH121/1.0	BH122/0.5	BH123/3.5
Date Sampled	----------	22/12/2011	22/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	9/01/2012	9/01/2012	9/01/2012	9/01/2012	9/01/2012
Sample mass tested	g	Approx 50g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils						
Our Reference:	UNITS	67099-30	67099-31	67099-33	67099-35	67099-37
Your Reference	----------	BH124/3.0	BH125/0.2	BH126/0.2 (1.6)	BH127/2.0	BH128/0.5
Date Sampled	----------	23/12/2011	23/12/2011	23/12/2011	23/12/2011	23/12/2011
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	9/01/2012	9/01/2012	9/01/2012	9/01/2012	9/01/2012
Sample mass tested	g	Approx 50g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

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-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/01/2012	67099-1	05/01/2011 || 05/01/2011	LCS-1	05/01/2012
Date analysed	-			05/01/2012	67099-1	05/01/2011 || 05/01/2011	LCS-1	05/01/2012
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	67099-1	<25 || <25	LCS-1	98%
Benzene	mg/kg	0.2	Org-016	<0.2	67099-1	<0.2 || <0.2	LCS-1	85%
Toluene	mg/kg	0.5	Org-016	<0.5	67099-1	<0.5 || <0.5	LCS-1	97%
Ethylbenzene	mg/kg	1	Org-016	<1	67099-1	<1 || <1	LCS-1	101%
m+p-xylene	mg/kg	2	Org-016	<2	67099-1	<2 || <2	LCS-1	103%
o-Xylene	mg/kg	1	Org-016	<1	67099-1	<1 || <1	LCS-1	102%
Surrogate aaa-Trifluorotoluene	%		Org-016	106	67099-1	91 || 94 || RPD: 3	LCS-1	102%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Date analysed	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	67099-1	<50 || <50	LCS-1	86%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	67099-1	<100 || <100	LCS-1	109%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	67099-1	<100 || <100	LCS-1	86%
Surrogate o-Terphenyl	%		Org-003	93	67099-1	91 || 90 || RPD: 1	LCS-1	104%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Date analysed	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	LCS-1	108%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	LCS-1	101%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	LCS-1	102%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	LCS-1	102%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	LCS-1	115%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	LCS-1	94%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	67099-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	67099-1	<0.05 || <0.05	LCS-1	97%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	99	67099-1	102 || 98 || RPD: 4	LCS-1	100%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Date analysed	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
HCB	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	103%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	104%
Heptachlor	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	98%
delta-BHC	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	92%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	102%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	101%
Dieldrin	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	102%
Endrin	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	100%
pp-DDD	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	108%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	LCS-1	103%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-005	92	67099-1	98 || 98 || RPD: 0	LCS-1	88%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Date analysed	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Diazinon	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	LCS-1	93%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	LCS-1	120%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	67099-1	<0.1 || <0.1	LCS-1	108%
Surrogate TCLMX	%		Org-008	92	67099-1	98 || 98 || RPD: 0	LCS-1	95%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Date analysed	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	67099-1	<0.1 || <0.1	LCS-1	107%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	67099-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	92	67099-1	98 || 98 || RPD: 0	LCS-1	101%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			05/01/2012	67099-1	05/01/2012 || 05/01/2012	LCS-1	05/01/2012
Date analysed	-			06/01/2012	67099-1	06/01/2012 || 06/01/2012	LCS-1	06/01/2012
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	67099-1	6 || 6 || RPD: 0	LCS-1	100%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	67099-1	<0.5 || <0.5	LCS-1	101%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	67099-1	15 || 16 || RPD: 6	LCS-1	102%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	67099-1	26 || 27 || RPD: 4	LCS-1	99%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	67099-1	34 || 33 || RPD: 3	LCS-1	106%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	67099-1	<0.1 || <0.1	LCS-1	120%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	67099-1	20 || 20 || RPD: 0	LCS-1	102%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	67099-1	51 || 46 || RPD: 10	LCS-1	100%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

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

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	67099-18	05/01/2011 || 05/01/2011	67099-9	05/01/2012
Date analysed	-	67099-18	05/01/2011 || 05/01/2011	67099-9	05/01/2012
vTRH C_6 - C_9	mg/kg	67099-18	<25 || <25	67099-9	84%
Benzene	mg/kg	67099-18	<0.2 || <0.2	67099-9	74%
Toluene	mg/kg	67099-18	<0.5 || <0.5	67099-9	81%
Ethylbenzene	mg/kg	67099-18	<1 || <1	67099-9	86%
m+p-xylene	mg/kg	67099-18	<2 || <2	67099-9	89%
o-Xylene	mg/kg	67099-18	<1 || <1	67099-9	92%
Surrogate aaa-Trifluorotoluene	%	67099-18	100 || 106 || RPD: 6	67099-9	92%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Date analysed	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
TRH C_{10} - C_{14}	mg/kg	67099-18	<50 || <50	67099-9	88%
TRH C_{15} - C_{28}	mg/kg	67099-18	<100 || <100	67099-9	111%
TRH C_{29} - C_{36}	mg/kg	67099-18	<100 || <100	67099-9	85%
Surrogate o-Terphenyl	%	67099-18	88 || 98 || RPD: 11	67099-9	104%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Date analysed	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Naphthalene	mg/kg	67099-18	<0.1 || <0.1	67099-9	100%
Acenaphthylene	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	67099-18	<0.1 || <0.1	67099-9	100%
Phenanthrene	mg/kg	67099-18	<0.1 || <0.1	67099-9	101%
Anthracene	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Fluoranthene	mg/kg	67099-18	<0.1 || <0.1	67099-9	100%
Pyrene	mg/kg	67099-18	<0.1 || <0.1	67099-9	113%
Benzo(a)anthracene	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	67099-18	<0.1 || <0.1	67099-9	93%
Benzo(b+k)fluoranthene	mg/kg	67099-18	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	67099-18	<0.05 || <0.05	67099-9	96%
Indeno(1,2,3-c,d)pyrene	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	67099-18	97 || 96 || RPD: 1	67099-9	99%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Date analysed	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
HCB	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	67099-18	<0.1 || <0.1	67099-9	112%
gamma-BHC	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	67099-18	<0.1 || <0.1	67099-9	114%
Heptachlor	mg/kg	67099-18	<0.1 || <0.1	67099-9	108%
delta-BHC	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	67099-18	<0.1 || <0.1	67099-9	101%
Heptachlor Epoxide	mg/kg	67099-18	<0.1 || <0.1	67099-9	111%
gamma-Chlordane	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	67099-18	<0.1 || <0.1	67099-9	110%
Dieldrin	mg/kg	67099-18	<0.1 || <0.1	67099-9	112%
Endrin	mg/kg	67099-18	<0.1 || <0.1	67099-9	110%
pp-DDD	mg/kg	67099-18	<0.1 || <0.1	67099-9	119%
Endosulfan II	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	67099-18	<0.1 || <0.1	67099-9	113%
Methoxychlor	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	67099-18	78 || 99 || RPD: 24	67099-9	94%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Date analysed	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Diazinon	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	67099-18	<0.1 || <0.1	67099-9	93%
Fenitrothion	mg/kg	67099-18	<0.1 || <0.1	67099-9	120%
Bromophos-ethyl	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	67099-18	<0.1 || <0.1	67099-9	108%
Surrogate TCLMX	%	67099-18	78 || 99 || RPD: 24	67099-9	101%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Date analysed	-	67099-18	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Arochlor 1016	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	67099-18	<0.1 || <0.1	67099-9	107%
Arochlor 1260	mg/kg	67099-18	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	67099-18	78 || 99 || RPD: 24	67099-9	101%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	67099-18	05/01/2012 || 05/01/2012	LCS-2	05/01/2012
Date analysed	-	67099-18	06/01/2012 || 06/01/2012	LCS-2	06/01/2012
Arsenic	mg/kg	67099-18	5 || <4	LCS-2	98%
Cadmium	mg/kg	67099-18	<0.5 || <0.5	LCS-2	100%
Chromium	mg/kg	67099-18	8 || 7 || RPD: 13	LCS-2	100%
Copper	mg/kg	67099-18	40 || 39 || RPD: 3	LCS-2	97%
Lead	mg/kg	67099-18	24 || 23 || RPD: 4	LCS-2	104%
Mercury	mg/kg	67099-18	<0.1 || <0.1	LCS-2	111%
Nickel	mg/kg	67099-18	27 || 22 || RPD: 20	LCS-2	99%
Zinc	mg/kg	67099-18	75 || 60 || RPD: 22	LCS-2	98%

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	67099-36	05/01/2011 || 05/01/2011
Date analysed	-	67099-36	05/01/2011 || 05/01/2011
vTRH C_6 - C_9	mg/kg	67099-36	<25 || <25
Benzene	mg/kg	67099-36	<0.2 || <0.2
Toluene	mg/kg	67099-36	<0.5 || <0.5
Ethylbenzene	mg/kg	67099-36	<1 || <1
m+p-xylene	mg/kg	67099-36	<2 || <2
o-Xylene	mg/kg	67099-36	<1 || <1
Surrogate aaa-Trifluorotoluene	%	67099-36	91 || 96 || RPD: 5
QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	67099-36	05/01/2012 || 05/01/2012
Date analysed	-	67099-36	05/01/2012 || 05/01/2012
TRH C_{10} - C_{14}	mg/kg	67099-36	<50 || <50
TRH C_{15} - C_{28}	mg/kg	67099-36	<100 || <100
TRH C_{29} - C_{36}	mg/kg	67099-36	<100 || <100
Surrogate o-Terphenyl	%	67099-36	91 || 90 || RPD: 1
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	67099-36	05/01/2012 || 05/01/2012
Date analysed	-	67099-36	05/01/2012 || 05/01/2012
Naphthalene	mg/kg	67099-36	<0.1 || <0.1
Acenaphthylene	mg/kg	67099-36	<0.1 || <0.1
Acenaphthene	mg/kg	67099-36	<0.1 || <0.1
Fluorene	mg/kg	67099-36	<0.1 || <0.1
Phenanthrene	mg/kg	67099-36	<0.1 || <0.1
Anthracene	mg/kg	67099-36	<0.1 || <0.1
Fluoranthene	mg/kg	67099-36	<0.1 || <0.1
Pyrene	mg/kg	67099-36	<0.1 || <0.1
Benzo(a)anthracene	mg/kg	67099-36	<0.1 || <0.1
Chrysene	mg/kg	67099-36	<0.1 || <0.1
Benzo(b+k)fluoranthene	mg/kg	67099-36	<0.2 || <0.2
Benzo(a)pyrene	mg/kg	67099-36	<0.05 || <0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	67099-36	<0.1 || <0.1
Dibenzo(a,h)anthracene	mg/kg	67099-36	<0.1 || <0.1
Benzo(g,h,i)perylene	mg/kg	67099-36	<0.1 || <0.1
Surrogate p-Terphenyl-d_{14}	%	67099-36	105 || 100 || RPD: 5

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	67099-24	05/01/2012 || 05/01/2012	LCS-3	05/01/2012
Date analysed	-	67099-24	06/01/2012 || 06/01/2012	LCS-3	06/01/2012
Arsenic	mg/kg	67099-24	4 || 5 || RPD: 22	LCS-3	102%
Cadmium	mg/kg	67099-24	<0.5 || <0.5	LCS-3	102%
Chromium	mg/kg	67099-24	9 || 10 || RPD: 11	LCS-3	103%
Copper	mg/kg	67099-24	36 || 39 || RPD: 8	LCS-3	100%
Lead	mg/kg	67099-24	26 || 28 || RPD: 7	LCS-3	107%
Mercury	mg/kg	67099-24	<0.1 || <0.1	LCS-3	123%
Nickel	mg/kg	67099-24	20 || 22 || RPD: 10	LCS-3	103%
Zinc	mg/kg	67099-24	71 || 75 || RPD: 5	LCS-3	103%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	67099-36	05/01/2012 || 05/01/2012	67099-9	05/01/2012
Date analysed	-	67099-36	06/01/2012 || 06/01/2012	67099-9	06/01/2012
Arsenic	mg/kg	67099-36	6 || 6 || RPD: 0	67099-9	97%
Cadmium	mg/kg	67099-36	<0.5 || <0.5	67099-9	92%
Chromium	mg/kg	67099-36	14 || 14 || RPD: 0	67099-9	99%
Copper	mg/kg	67099-36	37 || 41 || RPD: 10	67099-9	104%
Lead	mg/kg	67099-36	25 || 26 || RPD: 4	67099-9	97%
Mercury	mg/kg	67099-36	0.1 || 0.1 || RPD: 0	67099-9	113%
Nickel	mg/kg	67099-36	23 || 23 || RPD: 0	67099-9	89%
Zinc	mg/kg	67099-36	61 || 61 || RPD: 0	67099-9	86%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	67099-25	05/01/2012
Date analysed	-	[NT]	[NT]	67099-25	06/01/2012
Arsenic	mg/kg	[NT]	[NT]	67099-25	95%
Cadmium	mg/kg	[NT]	[NT]	67099-25	90%
Chromium	mg/kg	[NT]	[NT]	67099-25	95%
Copper	mg/kg	[NT]	[NT]	67099-25	102%
Lead	mg/kg	[NT]	[NT]	67099-25	94%
Mercury	mg/kg	[NT]	[NT]	67099-25	118%
Nickel	mg/kg	[NT]	[NT]	67099-25	91%
Zinc	mg/kg	[NT]	[NT]	67099-25	90%

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in its own container.

Asbestos ID was analysed by Approved Identifier: Alex Tam
Asbestos ID was authorised by Approved Signatory: Paul Ching

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:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange NSW 2567

ph: 02 4647 0075
Fax: 02 4646 1886

Attention: Michael Gol

Sample log in details:

Your reference:	**34275.02, Campbelltown Hospital**
Envirolab Reference:	**67099**
Date received:	03/01/12
Date results expected to be reported:	**10/01/12**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	41 soils
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

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Phase 2 Contamination assessment, Campbelltown Hospital			**To:**	Envirolab Services
Project No:	34275.02	**Sampler:**	DJM		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	CCK	**Mob. Phone:**	0408 762 036	**Attn:**	Aileen Hie
Email:	Michael.Gol@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: 8 Heavy Metals	TRH and BTEX	PAH	OCP/OPP/PCB	Asbestos					Notes/preservation
BH101/0.2	1	22/12/2011	S	G	x	x	x	x	x					
BH102/0.2	2	22/12/2011	S	G	x	x	x							
BH103/0.2	3	22/12/2011	S	G	x	x	x		x					
BH104/0.2	4	22/12/2011	S	G	x			x						
BH105/0.2	5	22/12/2011	S	G	x									
BH106/0.2	6	22/12/2011	S	G	x	x	x		x					
BH107/0.2	7	22/12/2011	S	G	x									
BH108/0.2	8	22/12/2011	S	G	x									
BH109/0.2	9	22/12/2011	S	G	x	x	x	x	x					
BH110/0.2	10	22/12/2011	S	G	x	x	x	x						
BH111/0.2	11	22/12/2011	S	G	x				x					
BH112/0.2	12	22/12/2011	S	G	x				x					
BH112/0.5	13	22/12/2011	S	G	x	x	x							

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 67099
Date Received: 03/01
Time Received: 17:30
Received by: SO
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No:

Send Results to: Douglas Partners Pty Ltd **Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567 **Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886

Relinquished by: M. Gol **Transported to laboratory by:**

Signed: **Date & Time:** 03/01/2012 1pm **Received by:** Sophie ECS

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Phase 2 Contamination assessment, Campbelltown Hospital			**To:**	Envirolab Services
Project No:	34275.02	**Sampler:**	DJM		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	CCK	**Mob. Phone:**	0408 762 036	**Attn:**	Aileen Hie
Email:	Michael.Gol@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: 8 Heavy Metals	TRH and BTEX	PAH	OCP/OPP/PCB	Asbestos					Notes/preservation
BH113/0.2	14	22/12/2011	S	G	x				x					
BH114/0.2	15	22/12/2011	S	G	x	x	x		x					
BH115/0.2	16	22/12/2011	S	G	x	x	x		x					
BH116/0.5	17	22/12/2011	S	G	x				x					
BH117/0.2	18	22/12/2011	S	G	x	x	x	x	x					
BH117/1.3	19	22/12/2011	S	G	x	x	x							
BH118/0.2	20	22/12/2011	S	G	x	x	x	x						
BH119/0.2	21	22/12/2011	S	G	x									
BH120/0.2	22	22/12/2011	S	G	x	x	x		x					
BH121/0.2	23	23/12/2011	S	G	x			x						
BH121/1.0	24	23/12/2011	S	G	x				x					
BH122/0.2	25	23/12/2010	S	G	x									
BH122/0.5	26	23/12/2011	S	G	x	x	x		x					

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by: M. Gol		**Transported to laboratory by:**	
Signed:	**Date & Time:** 03/01/2012 1pm	**Received by:** Sophie ELS	

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Phase 2 Contamination assessment, Campbelltown Hospital			**To:**	Envirolab Services
Project No:	34275.02	**Sampler:**	DJM		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	CCK	**Mob. Phone:**	0408 762 036	**Attn:**	Aileen Hie
Email:	Michael.Gol@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: 8 Heavy Metals	TRH and BTEX	PAH	OCP/OPP/PCB	Asbestos					Notes/preservation
BH123/0.2	27	23/12/2011	S	G	x									
BH123/3.5	28	23/12/2011	S	G	x	x	x		x					
BH124/0.5	29	23/12/2011	S	G	x	x	x							
BH124/3.0	30	23/12/2011	S	G	x	x	x		x					
BH125/0.2	31	23/12/2011	S	G	x				x					
BH125/1.5	32	23/12/2011	S	G	x	x	x							
BH126/0.5	33	23/12/2011	S	G	x	x	x	x	x					
BH127/0.2	34	23/12/2011	S	G	x	x	x	x						
BH127/2.0	35	23/12/2011	S	G	x				x					
BH127/3.1	36	23/12/2011	S	G	x	x	x							
BH128/0.5	37	23/12/2011	S	G	x	x	x		x					
BD1	38	23/12/2011	S	G	x		x							
BD2	39	23/12/2011	S	G	x	x								

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	M-Gol		**Transported to laboratory by:**		
Signed:	Michael Gol	**Date & Time:** 03/01/2012 1pm	**Received by:**		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Phase 2 Contamination assessment, Campbelltown Hospital			**To:**	Envirolab Services
Project No:	34275.02	**Sampler:**	DJM		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	CCK	**Mob. Phone:**	0408 762 036	**Attn:**	Aileen Hie
Email:	Michael.Gol@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: 8 Heavy Metals	TRH and BTEX	PAH	OCP/OPP/PCB	Asbestos					Notes/preservation
BD3	40	23/12/2011	S	G	x		x							
BD6	41	23/12/2011	S	G	x	x								

Lab Report No:

Send Results to: Douglas Partners Pty Ltd **Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567 **Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886

Relinquished by: M. Gol **Transported to laboratory by:**

Signed: **Date & Time:** 03/01/2012 1pm **Received by:** SOPHIE ELS

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 68316

Client:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange
NSW 2567

Attention: Michael Gol

Sample log in details:

Your Reference:	**34275.02, Campbelltown Hospital**
No. of samples:	23 Soils
Date samples received / completed instructions received	31/01/12 / 31/01/12

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:	7/02/12 / 6/02/12
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:

Rhian Morgan
Reporting Supervisor

Nick Sarlamis
Inorganics Supervisor

Paul Ching
Approved Signatory

Jeremy Faircloth
Chemist

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTRH & BTEX in Soil						
Our Reference:	UNITS	68316-1	68316-2	68316-3	68316-4	68316-5
Your Reference	----------	MW101	MW102	MW102	MW102B	MW103
Depth	----------	3.5-3.6	1.5-1.6	2.0-2.1	6.0-6.1	1.0-1.1
Date Sampled		23/01/2012	23/01/2012	23/01/2012	23/01/2012	23/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	02/02/2012	02/02/2012	02/02/2012	02/02/2012	02/02/2012
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	90	90	89	87

vTRH & BTEX in Soil						
Our Reference:	UNITS	68316-6	68316-7	68316-8	68316-9	68316-10
Your Reference	----------	MW103	MW104	MW105	MW105	MW106
Depth	----------	3.5-3.6	2.5-2.6	1.5-1.6	2.5-2.6	3.5-3.6
Date Sampled		23/01/2012	24/01/2012	24/01/2012	24/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	02/02/2012	02/02/2012	02/02/2012	02/02/2012	02/02/2012
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	91	100	85	91	95

vTRH & BTEX in Soil					
Our Reference:	UNITS	68316-14	68316-20	68316-21	68316-23
Your Reference	----------	BH130	BH133	BH134	BH136
Depth	----------	4.9-5.0	2.5-2.6	3.0-3.1	1.0-1.1
Date Sampled		25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	02/02/2012	02/02/2012	02/02/2012	02/02/2012
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	81	90	91

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	68316-1	68316-2	68316-3	68316-4	68316-5
Your Reference	----------	MW101	MW102	MW102	MW102B	MW103
Depth	----------	3.5-3.6	1.5-1.6	2.0-2.1	6.0-6.1	1.0-1.1
Date Sampled		23/01/2012	23/01/2012	23/01/2012	23/01/2012	23/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
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	%	98	96	95	99	96

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	68316-6	68316-7	68316-8	68316-9	68316-10
Your Reference	----------	MW103	MW104	MW105	MW105	MW106
Depth	----------	3.5-3.6	2.5-2.6	1.5-1.6	2.5-2.6	3.5-3.6
Date Sampled		23/01/2012	24/01/2012	24/01/2012	24/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
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	%	94	93	93	94	97

sTRH in Soil (C10-C36)					
Our Reference:	UNITS	68316-14	68316-20	68316-21	68316-23
Your Reference	----------	BH130	BH133	BH134	BH136
Depth	----------	4.9-5.0	2.5-2.6	3.0-3.1	1.0-1.1
Date Sampled		25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	93	98	94	94

PAHs in Soil						
Our Reference:	UNITS	68316-1	68316-2	68316-3	68316-4	68316-5
Your Reference	----------	MW101	MW102	MW102	MW102B	MW103
Depth	----------	3.5-3.6	1.5-1.6	2.0-2.1	6.0-6.1	1.0-1.1
Date Sampled		23/01/2012	23/01/2012	23/01/2012	23/01/2012	23/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
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	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	101	91	91	94	99

PAHs in Soil						
Our Reference:	UNITS	68316-6	68316-7	68316-8	68316-9	68316-10
Your Reference	----------	MW103	MW104	MW105	MW105	MW106
Depth	----------	3.5-3.6	2.5-2.6	1.5-1.6	2.5-2.6	3.5-3.6
Date Sampled		23/01/2012	24/01/2012	24/01/2012	24/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	02/02/2012	02/02/2012	02/02/2012	02/02/2012
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	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	100	104	103	103	102

PAHs in Soil					
Our Reference:	UNITS	68316-14	68316-20	68316-21	68316-23
Your Reference	----------	BH130	BH133	BH134	BH136
Depth	----------	4.9-5.0	2.5-2.6	3.0-3.1	1.0-1.1
Date Sampled		25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	02/02/2012	02/02/2012	02/02/2012	02/02/2012
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	107	98	97	97

Organochlorine Pesticides in soil		
Our Reference:	UNITS	68316-11
Your Reference	----------	BH129
Depth	----------	0.1-0.2
Date Sampled		25/01/2012
Type of sample		Soil
Date extracted	-	01/02/2012
Date analysed	-	02/02/2012
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	%	101

Organophosphorus Pesticides		
Our Reference:	UNITS	68316-11
Your Reference	----------	BH129
Depth	----------	0.1-0.2
Date Sampled		25/01/2012
Type of sample		Soil
Date extracted	-	01/02/2012
Date analysed	-	02/02/2012
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	%	101

PCBs in Soil		
Our Reference:	UNITS	68316-11
Your Reference	----------	BH129
Depth	----------	0.1-0.2
Date Sampled		25/01/2012
Type of sample		Soil
Date extracted	-	01/02/2012
Date analysed	-	02/02/2012
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	%	101

Total Phenolics in Soil						
Our Reference:	UNITS	68316-3	68316-4	68316-8	68316-9	68316-10
Your Reference	----------	MW102	MW102B	MW105	MW105	MW106
Depth	----------	2.0-2.1	6.0-6.1	1.5-1.6	2.5-2.6	3.5-3.6
Date Sampled		23/01/2012	23/01/2012	24/01/2012	24/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/02/2012	06/02/2012	06/02/2012	06/02/2012	06/02/2012
Date analysed	-	06/02/2012	06/02/2012	06/02/2012	06/02/2012	06/02/2012
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Acid Extractable metals in soil						
Our Reference:	UNITS	68316-1	68316-2	68316-3	68316-4	68316-5
Your Reference	----------	MW101	MW102	MW102	MW102B	MW103
Depth	----------	3.5-3.6	1.5-1.6	2.0-2.1	6.0-6.1	1.0-1.1
Date Sampled		23/01/2012	23/01/2012	23/01/2012	23/01/2012	23/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Arsenic	mg/kg	7	<4	<4	8	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	13	8	5	20	14
Copper	mg/kg	38	30	10	42	34
Lead	mg/kg	22	15	5	23	22
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	28	11	13	14
Zinc	mg/kg	64	43	15	68	52

Acid Extractable metals in soil						
Our Reference:	UNITS	68316-6	68316-7	68316-8	68316-9	68316-10
Your Reference	----------	MW103	MW104	MW105	MW105	MW106
Depth	----------	3.5-3.6	2.5-2.6	1.5-1.6	2.5-2.6	3.5-3.6
Date Sampled		23/01/2012	24/01/2012	24/01/2012	24/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Arsenic	mg/kg	6	<4	5	<4	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	0.5
Chromium	mg/kg	13	6	9	7	8
Copper	mg/kg	35	44	51	60	45
Lead	mg/kg	22	26	19	29	20
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	22	7	20	25
Zinc	mg/kg	59	140	37	110	77

Acid Extractable metals in soil						
Our Reference:	UNITS	68316-11	68316-12	68316-13	68316-14	68316-15
Your Reference	----------	BH129	BH129	BH130	BH130	BH131
Depth	----------	0.1-0.2	2.5-2.6	1.0-1.1	4.9-5.0	0.1-0.2
Date Sampled		25/01/2012	25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Arsenic	mg/kg	<4	<4	<4	5	4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	33	6	8	7	9
Copper	mg/kg	32	38	47	44	36
Lead	mg/kg	6	22	23	21	21
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	50	15	25	18	19
Zinc	mg/kg	36	53	79	71	61

Acid Extractable metals in soil						
Our Reference:	UNITS	68316-16	68316-17	68316-18	68316-20	68316-21
Your Reference	----------	BH131	BH132	BH132	BH133	BH134
Depth	----------	2.5-2.6	0.5-0.6	2.5-2.6	2.5-2.6	3.0-3.1
Date Sampled		25/01/2012	25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012	01/02/2012	01/02/2012	01/02/2012
Arsenic	mg/kg	<4	6	4	5	4
Cadmium	mg/kg	<0.5	0.6	<0.5	<0.5	<0.5
Chromium	mg/kg	9	6	6	10	11
Copper	mg/kg	46	50	39	41	44
Lead	mg/kg	18	23	24	22	22
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	26	28	32	19	22
Zinc	mg/kg	65	84	86	68	77

Acid Extractable metals in soil			
Our Reference:	UNITS	68316-22	68316-23
Your Reference	----------	BH135	BH136
Depth	----------	0.1-0.2	1.0-1.1
Date Sampled		25/01/2012	25/01/2012
Type of sample		Soil	Soil
Date digested	-	01/02/2012	01/02/2012
Date analysed	-	01/02/2012	01/02/2012
Arsenic	mg/kg	7	5
Cadmium	mg/kg	<0.5	<0.5
Chromium	mg/kg	13	8
Copper	mg/kg	26	44
Lead	mg/kg	24	25
Mercury	mg/kg	0.4	<0.1
Nickel	mg/kg	14	19
Zinc	mg/kg	54	67

Moisture						
Our Reference:	UNITS	68316-1	68316-2	68316-3	68316-4	68316-5
Your Reference	----------	MW101	MW102	MW102	MW102B	MW103
Depth	----------	3.5-3.6	1.5-1.6	2.0-2.1	6.0-6.1	1.0-1.1
Date Sampled		23/01/2012	23/01/2012	23/01/2012	23/01/2012	23/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/02/2012	1/02/2012	1/02/2012	1/02/2012	1/02/2012
Date analysed	-	2/02/2012	2/02/2012	2/02/2012	2/02/2012	2/02/2012
Moisture	%	18	7.1	20	27	13

Moisture						
Our Reference:	UNITS	68316-6	68316-7	68316-8	68316-9	68316-10
Your Reference	----------	MW103	MW104	MW105	MW105	MW106
Depth	----------	3.5-3.6	2.5-2.6	1.5-1.6	2.5-2.6	3.5-3.6
Date Sampled		23/01/2012	24/01/2012	24/01/2012	24/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/02/2012	1/02/2012	1/02/2012	1/02/2012	1/02/2012
Date analysed	-	2/02/2012	2/02/2012	2/02/2012	2/02/2012	2/02/2012
Moisture	%	12	8.1	19	8.4	6.8

Moisture						
Our Reference:	UNITS	68316-11	68316-12	68316-13	68316-14	68316-15
Your Reference	----------	BH129	BH129	BH130	BH130	BH131
Depth	----------	0.1-0.2	2.5-2.6	1.0-1.1	4.9-5.0	0.1-0.2
Date Sampled		25/01/2012	25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/02/2012	1/02/2012	1/02/2012	1/02/2012	1/02/2012
Date analysed	-	2/02/2012	2/02/2012	2/02/2012	2/02/2012	2/02/2012
Moisture	%	5.9	8.8	7.7	11	12

Moisture						
Our Reference:	UNITS	68316-16	68316-17	68316-18	68316-20	68316-21
Your Reference	----------	BH131	BH132	BH132	BH133	BH134
Depth	----------	2.5-2.6	0.5-0.6	2.5-2.6	2.5-2.6	3.0-3.1
Date Sampled		25/01/2012	25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/02/2012	1/02/2012	1/02/2012	1/02/2012	1/02/2012
Date analysed	-	2/02/2012	2/02/2012	2/02/2012	2/02/2012	2/02/2012
Moisture	%	8.6	6.4	10	10	14

Moisture			
Our Reference:	UNITS	68316-22	68316-23
Your Reference	----------	BH135	BH136
Depth	----------	0.1-0.2	1.0-1.1
Date Sampled		25/01/2012	25/01/2012
Type of sample		Soil	Soil
Date prepared	-	1/02/2012	1/02/2012
Date analysed	-	2/02/2012	2/02/2012
Moisture	%	18	11

Asbestos ID - soils						
Our Reference:	UNITS	68316-5	68316-11	68316-13	68316-15	68316-17
Your Reference	----------	MW103	BH129	BH130	BH131	BH132
Depth	----------	1.0-1.1	0.1-0.2	1.0-1.1	0.1-0.2	0.5-0.6
Date Sampled		23/01/2012	25/01/2012	25/01/2012	25/01/2012	25/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	3/02/2012	3/02/2012	3/02/2012	3/02/2012	3/02/2012
Sample mass tested	g	Approx 40g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown fine-grained soil	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils			
Our Reference:	UNITS	68316-19	68316-22
Your Reference	----------	BH133	BH135
Depth	----------	0.5-0.6	0.1-0.2
Date Sampled		25/01/2012	25/01/2012
Type of sample		Soil	Soil
Date analysed	-	3/02/2012	3/02/2012
Sample mass tested	g	Approx 50g	Approx 50g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected

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.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 21st ED 5530 D.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/02/2012	68316-1	01/02/2012 || 01/02/2012	LCS-6	01/02/2012
Date analysed	-			02/02/2012	68316-1	02/02/2012 || 02/02/2012	LCS-6	02/02/2012
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	68316-1	<25 || <25	LCS-6	91%
Benzene	mg/kg	0.2	Org-016	<0.2	68316-1	<0.2 || <0.2	LCS-6	88%
Toluene	mg/kg	0.5	Org-016	<0.5	68316-1	<0.5 || <0.5	LCS-6	91%
Ethylbenzene	mg/kg	1	Org-016	<1	68316-1	<1 || <1	LCS-6	88%
m+p-xylene	mg/kg	2	Org-016	<2	68316-1	<2 || <2	LCS-6	94%
o-Xylene	mg/kg	1	Org-016	<1	68316-1	<1 || <1	LCS-6	91%
Surrogate aaa-Trifluorotoluene	%		Org-016	98	68316-1	99 || 91 || RPD: 8	LCS-6	94%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/02/2012	68316-1	01/02/2012 || 01/02/2012	LCS-6	01/02/2012
Date analysed	-			01/02/2012	68316-1	01/02/2012 || 01/02/2012	LCS-6	01/02/2012
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	68316-1	<50 || <50	LCS-6	122%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	68316-1	<100 || <100	LCS-6	124%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	68316-1	<100 || <100	LCS-6	130%
Surrogate o-Terphenyl	%		Org-003	97	68316-1	98 || 94 || RPD: 4	LCS-6	136%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/02/2012	68316-1	01/02/2012 || 01/02/2012	LCS-5	01/02/2012
Date analysed	-			01/02/2012	68316-1	01/02/2012 || 01/02/2012	LCS-5	01/02/2012
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	LCS-5	111%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	LCS-5	107%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	LCS-5	100%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	LCS-5	102%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	LCS-5	92%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	LCS-5	102%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	68316-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	68316-1	<0.05 || <0.05	LCS-5	112%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	68316-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	95	68316-1	101 || 101 || RPD: 0	LCS-5	91%

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	-			01/02/2012	[NT]	[NT]	LCS-8	01/02/2012
Date analysed	-			02/02/2012	[NT]	[NT]	LCS-8	02/02/2012
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	123%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	124%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	116%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	109%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	122%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	121%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	125%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	125%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	121%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	119%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-005	101	[NT]	[NT]	LCS-8	102%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/02/2012	[NT]	[NT]	LCS-8	01/02/2012
Date analysed	-			02/02/2012	[NT]	[NT]	LCS-8	02/02/2012
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-8	99%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-8	112%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-8	98%
Surrogate TCLMX	%		Org-008	101	[NT]	[NT]	LCS-8	100%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/02/2012	[NT]	[NT]	LCS-8	01/02/2012
Date analysed	-			02/02/2012	[NT]	[NT]	LCS-8	02/02/2012
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-8	116%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	101	[NT]	[NT]	LCS-8	111%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/02/2012	68316-3	06/02/2012 || 06/02/2012	LCS-1	06/02/2012
Date analysed	-			06/02/2012	68316-3	06/02/2012 || 06/02/2012	LCS-1	06/02/2012
Total Phenolics (as Phenol)	mg/kg	5	Inorg-030	<5	68316-3	<5 || <5	LCS-1	98%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			01/02/2012	68316-1	01/02/2012 || 01/02/2012	LCS-1	01/02/2012
Date analysed	-			01/02/2012	68316-1	01/02/2012 || 01/02/2012	LCS-1	01/02/2012
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	68316-1	7 || 8 || RPD: 13	LCS-1	105%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	68316-1	<0.5 || <0.5	LCS-1	109%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	68316-1	13 || 13 || RPD: 0	LCS-1	107%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	68316-1	38 || 37 || RPD: 3	LCS-1	106%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	68316-1	22 || 25 || RPD: 13	LCS-1	105%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	68316-1	<0.1 || <0.1	LCS-1	118%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	68316-1	15 || 15 || RPD: 0	LCS-1	109%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	68316-1	64 || 62 || RPD: 3	LCS-1	107%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

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

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68316-2	01/02/2012
Date analysed	-	[NT]	[NT]	68316-2	02/02/2012
vTRH C_6 - C_9	mg/kg	[NT]	[NT]	68316-2	90%
Benzene	mg/kg	[NT]	[NT]	68316-2	86%
Toluene	mg/kg	[NT]	[NT]	68316-2	89%
Ethylbenzene	mg/kg	[NT]	[NT]	68316-2	89%
m+p-xylene	mg/kg	[NT]	[NT]	68316-2	93%
o-Xylene	mg/kg	[NT]	[NT]	68316-2	91%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	68316-2	91%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68316-2	01/02/2012
Date analysed	-	[NT]	[NT]	68316-2	01/02/2012
TRH C_{10} - C_{14}	mg/kg	[NT]	[NT]	68316-2	121%
TRH C_{15} - C_{28}	mg/kg	[NT]	[NT]	68316-2	123%
TRH C_{29} - C_{36}	mg/kg	[NT]	[NT]	68316-2	107%
Surrogate o-Terphenyl	%	[NT]	[NT]	68316-2	136%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68316-2	01/02/2012
Date analysed	-	[NT]	[NT]	68316-2	01/02/2012
Naphthalene	mg/kg	[NT]	[NT]	68316-2	107%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	68316-2	115%
Phenanthrene	mg/kg	[NT]	[NT]	68316-2	104%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	68316-2	101%
Pyrene	mg/kg	[NT]	[NT]	68316-2	97%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	68316-2	102%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	68316-2	107%
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]	68316-2	97%

QUALITY CONTROL Total Phenolics in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68316-4	06/02/2012
Date analysed	-	[NT]	[NT]	68316-4	06/02/2012
Total Phenolics (as Phenol)	mg/kg	[NT]	[NT]	68316-4	106%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	68316-11	01/02/2012 || 01/02/2012	LCS-2	01/02/2012
Date analysed	-	68316-11	01/02/2012 || 01/02/2012	LCS-2	01/02/2012
Arsenic	mg/kg	68316-11	<4 || <4	LCS-2	101%
Cadmium	mg/kg	68316-11	<0.5 || <0.5	LCS-2	105%
Chromium	mg/kg	68316-11	33 || 38 || RPD: 14	LCS-2	103%
Copper	mg/kg	68316-11	32 || 35 || RPD: 9	LCS-2	102%
Lead	mg/kg	68316-11	6 || 9 || RPD: 40	LCS-2	100%
Mercury	mg/kg	68316-11	<0.1 || <0.1	LCS-2	112%
Nickel	mg/kg	68316-11	50 || 54 || RPD: 8	LCS-2	104%
Zinc	mg/kg	68316-11	36 || 49 || RPD: 31	LCS-2	102%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	68316-2	01/02/2012
Date analysed	-	[NT]	[NT]	68316-2	01/02/2012
Arsenic	mg/kg	[NT]	[NT]	68316-2	92%
Cadmium	mg/kg	[NT]	[NT]	68316-2	90%
Chromium	mg/kg	[NT]	[NT]	68316-2	94%
Copper	mg/kg	[NT]	[NT]	68316-2	103%
Lead	mg/kg	[NT]	[NT]	68316-2	87%
Mercury	mg/kg	[NT]	[NT]	68316-2	111%
Nickel	mg/kg	[NT]	[NT]	68316-2	90%
Zinc	mg/kg	[NT]	[NT]	68316-2	89%

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in its own container.

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

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:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange NSW 2567

ph: 02 4647 0075
Fax: 02 4646 1886

Attention: Michael Gol

Sample log in details:

Your reference:	**34275.02, Campbelltown Hospital**
Envirolab Reference:	**68316**
Date received:	31/01/12
Date results expected to be reported:	**7/02/12**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	23 Soils
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

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Phase 2 Contamination assessment, Campbelltown Hospital	**To:**	Envirolab Services
			12 Ashley Street, Chatswood NSW 2067
Project No:	34275.02	**Attn:**	Alien Hie
Project Mgr:	CCK	**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Email:	Michael.Gol@douglaspartners.com.au	**Email:**	ahie@envirolabservices.com.au
Date Required:	Standard		

	Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: 8 Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols			Asbestos		Notes/preservation
1	MW101/3.5-3.6		23.01.2012	S	G, P	x		x	x						Combo 3
2	MW102/1.5-1.6		23.01.2012	S	G, P	x		x	x						Combo 3
3	MW102/2.0-2.1		23.01.2012	S	G, P	x		x	x	x					Combo 4
4	MW102B/6.0-6.1		23.01.2012	S	G, P	x		x	x	x					Combo 4
5	MW103/1.0-1.1		23.01.2012	S	G, P	x		x	x						Combo 3a
6	MW103/3.5-3.6		23.01.2012	S	G, P	x		x	x						Combo 3
7	MW104/2.5-2.6		24.01.2012	S	G, P	x		x	x						Combo 3
8	MW105/1.5-1.6		24.01.2012	S	G, P	x		x	x	x					Combo 4
9	MW105/2.5-2.6		24.01.2012	S	G, P	x		x	x	x					Combo 4
10	MW106/3.5-3.6		25.01.2012	S	G, P	x		x	x	x					Combo 4
11	BH129/0.1-0.2		25.01.2012	S	G, P	x	x							x	
12	BH129/2.5-2.6		25.01.2012	S	G, P	x									
13	BH130/1.0-1.1		25.01.2012	S	G, P	x								x	

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 68316 x
Date Received: 31/1/12
Time Received: 5:00
Received by: PT
Cool/Ambient
Ice/Icepack
Cool/Broken/None

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:	MG	**Transported to laboratory by:**	
Signed:		**Date & Time:** 31.01.2012	**Received by:** ELS (Post) 31/1/12 5:00

Form COC

CHAIN OF CUSTODY

Douglas Partners
Geotechnics | Environment | Groundwater

Project Name:	Phase 2 Contamination assessment, Campbelltown Hospital			**To:**	Envirolab Services
					12 Ashley Street, Chatswood NSW 2067
Project No:	34275.02	**Sampler:**	BAH	**Attn:**	Alien Hie
Project Mgr:	CCK	**Mob. Phone:**	0408 762 036	**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Email:	Michael.Gol@douglaspartners.com.au			**Email:**	ahie@envirolabservices.com.au
Date Required:	Standard				

	Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: 8 Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols			Asbestos		Notes/preservation
															Combo 3
14	BH130/4.9-5.0		25.01.2012	S	G, P	x		x	x				x		
15	BH131/0.1-0.2		25.01.2012	S	G, P	x									
16	BH131/2.5-2.6		25.01.2012	S	G, P	x							x		
17	BH132/0.5-0.6		25.01.2012	S	G, P	x									
18	BH132/2.5-2.6		25.01.2012	S	G, P	x							x		
19	BH133/0.5-0.6		25.01.2012	S	G, P										Combo 3
20	BH133/2.5-2.6		25.01.2012	S	G, P	x		x	x						Combo 3
21	BH134/3.0-3.1		25.01.2012	S	G, P	x		x	x				x		
22	BH135/0.1-0.2		25.01.2012	S	G, P	x									Combo 3
23	BH136/1.0-1.1		25.01.2012	S	G, P	x		x	x						Inter Lab Duplicate (SGS)
24	BD3/250112		25.01.2012	S	G	x		x	x				x		Inter Lab Duplicate (SGS)
25	BD4/230112		23.01.2012	S	G	x									

Lab Report No:		**Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Send Results to:	Douglas Partners Pty Ltd		**Transported to laboratory by:**
Relinquished by:	MG	**Date & Time:** 31.01.2012	**Received by:**
Signed:			

Form COC

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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CERTIFICATE OF ANALYSIS 68438

Client:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange
NSW 2567

Attention: Michael Gol

Sample log in details:

Your Reference:	**34275.02, Campbelltown Hospital**
No. of samples:	11 Soils
Date samples received / completed instructions received	02/02/12 / 02/02/12

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:	9/02/12 / 7/02/12
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

Giovanni Agosti
Technical Manager

Paul Ching
Approved Signatory

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTRH & BTEX in Soil						
Our Reference:	UNITS	68438-1	68438-3	68438-4	68438-5	68438-6
Your Reference	----------	BH137	BH139	BH139	BH140	BH140
Depth	----------	0.2	0.2	2.5	0.5	2.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	05/02/2012	05/02/2012	05/02/2012	05/02/2012	05/02/2012
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	102	99	100	98

vTRH & BTEX in Soil					
Our Reference:	UNITS	68438-7	68438-9	68438-10	68438-11
Your Reference	----------	BH141	BH143	BH144	BH145
Depth	----------	0.2	2.5	0.5	1.0
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	05/02/2012	05/02/2012	05/02/2012	05/02/2012
vTRH C_6 - C_9	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	106	106	100

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	68438-1	68438-3	68438-4	68438-5	68438-6
Your Reference	----------	BH137	BH139	BH139	BH140	BH140
Depth	----------	0.2	0.2	2.5	0.5	2.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	04/02/2012	04/02/2012	04/02/2012	04/02/2012	04/02/2012
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	%	101	97	99	97	98

sTRH in Soil (C10-C36)					
Our Reference:	UNITS	68438-7	68438-9	68438-10	68438-11
Your Reference	----------	BH141	BH143	BH144	BH145
Depth	----------	0.2	2.5	0.5	1.0
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	04/02/2012	04/02/2012	04/02/2012	04/02/2012
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	97	98	98	97

PAHs in Soil						
Our Reference:	UNITS	68438-1	68438-3	68438-4	68438-5	68438-6
Your Reference	----------	BH137	BH139	BH139	BH140	BH140
Depth	----------	0.2	0.2	2.5	0.5	2.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012	03/02/2012
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	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.11	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	108	85	95	99	62

PAHs in Soil					
Our Reference:	UNITS	68438-7	68438-9	68438-10	68438-11
Your Reference	----------	BH141	BH143	BH144	BH145
Depth	----------	0.2	2.5	0.5	1.0
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	77	97	66	95

Organochlorine Pesticides in soil					
Our Reference:	UNITS	68438-1	68438-3	68438-7	68438-10
Your Reference	----------	BH137	BH139	BH141	BH144
Depth	----------	0.2	0.2	0.2	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	04/02/2012	04/02/2012	04/02/2012	04/02/2012
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	102	102	103	103

Organophosphorus Pesticides					
Our Reference:	UNITS	68438-1	68438-3	68438-7	68438-10
Your Reference	----------	BH137	BH139	BH141	BH144
Depth	----------	0.2	0.2	0.2	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	04/02/2012	04/02/2012	04/02/2012	04/02/2012
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	102	102	103	103

PCBs in Soil					
Our Reference:	UNITS	68438-1	68438-3	68438-7	68438-10
Your Reference	----------	BH137	BH139	BH141	BH144
Depth	----------	0.2	0.2	0.2	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/02/2012	03/02/2012	03/02/2012	03/02/2012
Date analysed	-	04/02/2012	04/02/2012	04/02/2012	04/02/2012
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	102	102	103	103

Acid Extractable metals in soil						
Our Reference:	UNITS	68438-1	68438-2	68438-3	68438-4	68438-5
Your Reference	----------	BH137	BH138	BH139	BH139	BH140
Depth	----------	0.2	0.2	0.2	2.5	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	3/02/2012	3/02/2012	3/02/2012	3/02/2012	3/02/2012
Date analysed	-	3/02/2012	3/02/2012	3/02/2012	3/02/2012	3/02/2012
Arsenic	mg/kg	7	8	5	6	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	17	19	13	17	13
Copper	mg/kg	33	28	35	35	35
Lead	mg/kg	27	24	24	24	22
Mercury	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	14	7	15	18	13
Zinc	mg/kg	46	29	52	59	47

Acid Extractable metals in soil						
Our Reference:	UNITS	68438-6	68438-7	68438-8	68438-9	68438-10
Your Reference	----------	BH140	BH141	BH142	BH143	BH144
Depth	----------	2.5	0.2	1.0	2.5	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	3/02/2012	3/02/2012	3/02/2012	3/02/2012	3/02/2012
Date analysed	-	3/02/2012	3/02/2012	3/02/2012	3/02/2012	3/02/2012
Arsenic	mg/kg	4	5	6	6	4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	9	7	12	10	6
Copper	mg/kg	41	44	36	33	47
Lead	mg/kg	19	22	23	20	20
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	21	24	10	13	22
Zinc	mg/kg	63	81	41	50	75

Acid Extractable metals in soil		
Our Reference:	UNITS	68438-11
Your Reference	----------	BH145
Depth	----------	1.0
Date Sampled		31/01/2012
Type of sample		Soil
Date digested	-	3/02/2012
Date analysed	-	3/02/2012
Arsenic	mg/kg	5
Cadmium	mg/kg	<0.5
Chromium	mg/kg	7
Copper	mg/kg	49
Lead	mg/kg	29
Mercury	mg/kg	0.1
Nickel	mg/kg	27
Zinc	mg/kg	86

Moisture						
Our Reference:	UNITS	68438-1	68438-2	68438-3	68438-4	68438-5
Your Reference	----------	BH137	BH138	BH139	BH139	BH140
Depth	----------	0.2	0.2	0.2	2.5	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	3/02/2012	3/02/2012	3/02/2012	3/02/2012	3/02/2012
Date analysed	-	6/02/2012	6/02/2012	6/02/2012	6/02/2012	6/02/2012
Moisture	%	17	19	17	19	17

Moisture						
Our Reference:	UNITS	68438-6	68438-7	68438-8	68438-9	68438-10
Your Reference	----------	BH140	BH141	BH142	BH143	BH144
Depth	----------	2.5	0.2	1.0	2.5	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	3/02/2012	3/02/2012	3/02/2012	3/02/2012	3/02/2012
Date analysed	-	6/02/2012	6/02/2012	6/02/2012	6/02/2012	6/02/2012
Moisture	%	12	12	14	15	8.6

Moisture		
Our Reference:	UNITS	68438-11
Your Reference	----------	BH145
Depth	----------	1.0
Date Sampled		31/01/2012
Type of sample		Soil
Date prepared	-	3/02/2012
Date analysed	-	6/02/2012
Moisture	%	9.5

Asbestos ID - soils						
Our Reference:	UNITS	68438-3	68438-5	68438-7	68438-8	68438-10
Your Reference	----------	BH139	BH140	BH141	BH142	BH144
Depth	----------	0.2	0.5	0.2	1.0	0.5
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	6/02/2012	6/02/2012	6/02/2012	6/02/2012	6/02/2012
Sample mass tested	g	Approx 50g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown coarse-grained soil	Brown coarse-grained soil	Brown coarse-grained soil	Brown coarse-grained soil	Brown coarse-grained soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils		
Our Reference:	UNITS	68438-11
Your Reference	----------	BH145
Depth	----------	1.0
Date Sampled		31/01/2012
Type of sample		Soil
Date analysed	-	6/02/2012
Sample mass tested	g	Approx 50g
Sample Description	-	Brown coarse-grained soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected

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-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/02/2012	68438-1	03/02/2012 || 03/02/2012	LCS-2	03/02/2012
Date analysed	-			05/02/2012	68438-1	05/02/2012 || 05/02/2012	LCS-2	05/02/2012
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	68438-1	<25 || <25	LCS-2	99%
Benzene	mg/kg	0.2	Org-016	<0.2	68438-1	<0.2 || <0.2	LCS-2	98%
Toluene	mg/kg	0.5	Org-016	<0.5	68438-1	<0.5 || <0.5	LCS-2	96%
Ethylbenzene	mg/kg	1	Org-016	<1	68438-1	<1 || <1	LCS-2	96%
m+p-xylene	mg/kg	2	Org-016	<2	68438-1	<2 || <2	LCS-2	102%
o-Xylene	mg/kg	1	Org-016	<1	68438-1	<1 || <1	LCS-2	103%
Surrogate aaa-Trifluorotoluene	%		Org-016	100	68438-1	97 || 105 || RPD: 8	LCS-2	101%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/02/2012	68438-1	03/02/2012 || 03/02/2012	LCS-2	03/02/2012
Date analysed	-			04/02/2012	68438-1	04/02/2012 || 04/02/2012	LCS-2	04/02/2012
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	68438-1	<50 || <50	LCS-2	123%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	68438-1	<100 || <100	LCS-2	120%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	68438-1	<100 || <100	LCS-2	104%
Surrogate o-Terphenyl	%		Org-003	101	68438-1	101 || 100 || RPD: 1	LCS-2	136%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/02/2012	68438-1	03/02/2012 || 03/02/2012	LCS-2	03/02/2012
Date analysed	-			03/02/2012	68438-1	03/02/2012 || 03/02/2012	LCS-2	03/02/2012
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	LCS-2	105%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	LCS-2	109%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	LCS-2	120%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	LCS-2	108%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	LCS-2	120%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	LCS-2	106%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	68438-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	68438-1	<0.05 || <0.05	LCS-2	116%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	96	68438-1	108 || 103 || RPD: 5	LCS-2	78%

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	-			03/02/2012	68438-1	03/02/2012 || 03/02/2012	LCS-2	03/02/2012
Date analysed	-			04/02/2012	68438-1	04/02/2012 || 04/02/2012	LCS-2	04/02/2012
HCB	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	112%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	104%
Heptachlor	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	100%
delta-BHC	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	94%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	105%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	100%
Dieldrin	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	105%
Endrin	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	101%
pp-DDD	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	105%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	LCS-2	101%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-005	103	68438-1	102 || 103 || RPD: 1	LCS-2	103%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/02/2012	68438-1	03/02/2012 || 03/02/2012	LCS-2	03/02/2012
Date analysed	-			04/02/2012	68438-1	04/02/2012 || 04/02/2012	LCS-2	04/02/2012
Diazinon	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	LCS-2	91%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	LCS-2	109%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	68438-1	<0.1 || <0.1	LCS-2	102%
Surrogate TCLMX	%		Org-008	103	68438-1	102 || 103 || RPD: 1	LCS-2	99%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/02/2012	68438-1	03/02/2012 || 03/02/2012	LCS-2	03/02/2012
Date analysed	-			04/02/2012	68438-1	04/02/2012 || 04/02/2012	LCS-2	04/02/2012
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	68438-1	<0.1 || <0.1	LCS-2	101%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	68438-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	103	68438-1	102 || 103 || RPD: 1	LCS-2	107%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			03/02/2012	68438-1	3/02/2012 || 3/02/2012	LCS-1	03/02/2012
Date analysed	-			03/02/2012	68438-1	3/02/2012 || 3/02/2012	LCS-1	03/02/2012
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	68438-1	7 || 7 || RPD: 0	LCS-1	103%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	68438-1	<0.5 || <0.5	LCS-1	106%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	68438-1	17 || 18 || RPD: 6	LCS-1	105%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	68438-1	33 || 33 || RPD: 0	LCS-1	103%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	68438-1	27 || 27 || RPD: 0	LCS-1	102%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	68438-1	<0.1 || <0.1	LCS-1	102%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	68438-1	14 || 13 || RPD: 7	LCS-1	111%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	68438-1	46 || 42 || RPD: 9	LCS-1	104%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

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

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68438-3	03/02/2012
Date analysed	-	[NT]	[NT]	68438-3	05/02/2012
vTRH C_6 - C_9	mg/kg	[NT]	[NT]	68438-3	109%
Benzene	mg/kg	[NT]	[NT]	68438-3	107%
Toluene	mg/kg	[NT]	[NT]	68438-3	106%
Ethylbenzene	mg/kg	[NT]	[NT]	68438-3	107%
m+p-xylene	mg/kg	[NT]	[NT]	68438-3	112%
o-Xylene	mg/kg	[NT]	[NT]	68438-3	113%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	68438-3	103%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68438-3	03/02/2012
Date analysed	-	[NT]	[NT]	68438-3	04/02/2012
TRH C_{10} - C_{14}	mg/kg	[NT]	[NT]	68438-3	133%
TRH C_{15} - C_{28}	mg/kg	[NT]	[NT]	68438-3	129%
TRH C_{29} - C_{36}	mg/kg	[NT]	[NT]	68438-3	103%
Surrogate o-Terphenyl	%	[NT]	[NT]	68438-3	140%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68438-3	03/02/2012
Date analysed	-	[NT]	[NT]	68438-3	03/02/2012
Naphthalene	mg/kg	[NT]	[NT]	68438-3	136%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	68438-3	97%
Phenanthrene	mg/kg	[NT]	[NT]	68438-3	130%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Fluoranthene	mg/kg	[NT]	[NT]	68438-3	140%
Pyrene	mg/kg	[NT]	[NT]	68438-3	122%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	68438-3	109%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	68438-3	106%
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-d14	%	[NT]	[NT]	68438-3	106%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68438-3	03/02/2012
Date analysed	-	[NT]	[NT]	68438-3	04/02/2012
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	68438-3	122%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	68438-3	113%
Heptachlor	mg/kg	[NT]	[NT]	68438-3	110%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	68438-3	103%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	68438-3	115%
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]	68438-3	110%
Dieldrin	mg/kg	[NT]	[NT]	68438-3	115%
Endrin	mg/kg	[NT]	[NT]	68438-3	106%
pp-DDD	mg/kg	[NT]	[NT]	68438-3	111%
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]	68438-3	109%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	68438-3	109%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68438-3	03/02/2012
Date analysed	-	[NT]	[NT]	68438-3	04/02/2012
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]	68438-3	95%
Fenitrothion	mg/kg	[NT]	[NT]	68438-3	110%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	68438-3	104%
Surrogate TCLMX	%	[NT]	[NT]	68438-3	110%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	68438-3	03/02/2012
Date analysed	-	[NT]	[NT]	68438-3	04/02/2012
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]	68438-3	110%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	68438-3	119%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	68438-3	03/02/2012
Date analysed	-	[NT]	[NT]	68438-3	03/02/2012
Arsenic	mg/kg	[NT]	[NT]	68438-3	89%
Cadmium	mg/kg	[NT]	[NT]	68438-3	84%
Chromium	mg/kg	[NT]	[NT]	68438-3	86%
Copper	mg/kg	[NT]	[NT]	68438-3	93%
Lead	mg/kg	[NT]	[NT]	68438-3	76%
Mercury	mg/kg	[NT]	[NT]	68438-3	120%
Nickel	mg/kg	[NT]	[NT]	68438-3	85%
Zinc	mg/kg	[NT]	[NT]	68438-3	81%

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in its own container.

Asbestos ID was analysed by Approved Identifier: Alex Tam
Asbestos ID was authorised by Approved Signatory: Paul Ching

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
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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:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange NSW 2567

ph: 02 4647 0075
Fax: 02 4646 1886

Attention: Michael Gol

Sample log in details:

Your reference:	**34275.02, Campbelltown Hospital**
Envirolab Reference:	**68438**
Date received:	02/02/12
Date results expected to be reported:	**9/02/12**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	11 Soils
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

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Campbelltown Hospital, Phase 2 Contamination Assessment			**To:**	Envirolab Services
Project No:	34275.02	**Sampler:**	DJM		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	CCK	**Mob. Phone:**	0408 762 036	**Attn:**	Alien Hie
Email:	Michael.Gol@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	ahie@envirolabservices.com.au

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: 8 Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH				Asbestos		Notes/preservation
BH137 / 0.2	1	31/01/12	S	G,P	x	x	x	x						combo 6
BH138 / 0.2	2	31/01/12	S	G,P	x									
BH139 / 0.2	3	31/01/12	S	G,P	x	x	x	x				x		combo 6a
BH139 / 2.5	4	31/01/12	S	G,P	x		x	x						combo 3
BH140 / 0.5	5	31/01/12	S	G,P	x		x	x				x		combo 3a
BH140 / 2.5	6	31/01/12	S	G,P	x		x	x						combo 3
BH141 / 0.2	7	31/01/12	S	G,P	x	x	x	x				x		combo 6a
BH142 / 1.0	8	31/01/12	S	G,P	x							x		
BH143 / 2.5	9	31/01/12	S	G,P	x		x	x						combo 3
BH144 / 0.5	10	31/01/12	S	G,P	x	x	x	x				x		combo 6a
BH145 / 1.0	11	31/01/12	S	G,P	x		x	x				x		combo 3a
BD102/31/01/12		31/01/12	S	G	x			x						Inter Lab (SGS)

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 68438
Date Received: 2.2.12.
Time Received: 16.05.
Received by: DIA CH
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:**	Unit 5, 50 Topham Road, Smeaton Grange 2567	**Phone:**	(02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:	MG			**Transported to laboratory by:**	
Signed:		**Date & Time:**	02.02.12	**Received by:**	DIA CH / ELS 2.2.12 / 16.05.

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 68400

Client:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange
NSW 2567

Attention: Michael Gol

Sample log in details:

Your Reference:	**34275.02, Campbelltown Hospital**
No. of samples:	7 Waters
Date samples received / completed instructions received	01/02/2012 / 01/02/2012

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:	9/02/12 / 8/02/12
Date of Preliminary Report:	Not issued

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Nancy Zhang
Chemist

Giovanni Agosti
Technical Manager

Jeremy Faircloth
Chemist

vTRH & BTEX in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	68400-1 GWMW101 31/01/2012 Water	68400-2 GWMW102 31/01/2012 Water	68400-3 GWMW103 31/01/2012 Water	68400-4 GWMW104 31/01/2012 Water	68400-5 GWMW105 31/01/2012 Water
Date extracted	-	02/02/2012	02/02/2012	02/02/2012	02/02/2012	02/02/2012
Date analysed	-	02/02/2012	02/02/2012	02/02/2012	02/02/2012	02/02/2012
TRHC6 - C9	µg/L	<10	<20	<10	<10	<10
Benzene	µg/L	<1	<2	<1	<1	<1
Toluene	µg/L	<1	<2	<1	<1	<1
Ethylbenzene	µg/L	<1	<2	<1	<1	<1
m+p-xylene	µg/L	<2	<4	<2	<2	<2
o-xylene	µg/L	<1	<2	<1	<1	<1
Surrogate Dibromofluoromethane	%	104	101	104	105	105
Surrogate toluene-d8	%	98	103	98	99	98
Surrogate 4-BFB	%	96	93	97	96	95

vTRH & BTEX in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	68400-6 GWMW106 31/01/2012 Water
Date extracted	-	02/02/2012
Date analysed	-	02/02/2012
TRHC6 - C9	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	104
Surrogate toluene-d8	%	99
Surrogate 4-BFB	%	95

sTRH in Water (C10-C36)						
Our Reference:	UNITS	68400-1	68400-2	68400-3	68400-4	68400-5
Your Reference	----------	GWMW101	GWMW102	GWMW103	GWMW104	GWMW105
Date Sampled	----------	31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	06/02/2012	06/02/2012	06/02/2012	06/02/2012	06/02/2012
Date analysed	-	06/02/2012	06/02/2012	06/02/2012	06/02/2012	06/02/2012
TRHC$_{10}$ - C$_{14}$	µg/L	<50	<50	<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	%	90	93	112	103	112

sTRH in Water (C10-C36)		
Our Reference:	UNITS	68400-6
Your Reference	----------	GWMW106
Date Sampled	----------	31/01/2012
Type of sample		Water
Date extracted	-	06/02/2012
Date analysed	-	06/02/2012
TRHC$_{10}$ - C$_{14}$	µg/L	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100
Surrogate o-Terphenyl	%	107

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	68400-1 GWMW101 31/01/2012 Water	68400-2 GWMW102 31/01/2012 Water	68400-3 GWMW103 31/01/2012 Water	68400-4 GWMW104 31/01/2012 Water	68400-5 GWMW105 31/01/2012 Water
Date extracted	-	06/02/2012	06/02/2012	06/02/2012	06/02/2012	06/02/2012
Date analysed	-	07/02/2012	07/02/2012	07/02/2012	07/02/2012	07/02/2012
Naphthalene	µg/L	<1	<1	<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}	%	105	100	117	110	126

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	68400-6 GWMW106 31/01/2012 Water	68400-7 GWBD1/3101 2012 31/01/2012 Water
Date extracted	-	06/02/2012	06/02/2012
Date analysed	-	07/02/2012	07/02/2012
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Surrogate p-Terphenyl-d_{14}	%	116	114

HM in water - dissolved						
Our Reference:	UNITS	68400-1	68400-3	68400-4	68400-5	68400-6
Your Reference	----------	GWMW101	GWMW103	GWMW104	GWMW105	GWMW106
Date Sampled	----------	31/01/2012	31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	2/2/2012	2/2/2012	2/2/2012	2/2/2012	2/2/2012
Date analysed	-	2/2/2012	2/2/2012	2/2/2012	2/2/2012	2/2/2012
Lead-Dissolved	µg/L	<1	<1	1	<1	<1

HM in water - dissolved		
Our Reference:	UNITS	68400-7
Your Reference	----------	GWBD1/3101 2012
Date Sampled	----------	31/01/2012
Type of sample		Water
Date prepared	-	2/2/2012
Date analysed	-	2/2/2012
Lead-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.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.

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	-			02/02/2012	[NT]	[NT]	LCS-W1	02/02/2012
Date analysed	-			02/02/2012	[NT]	[NT]	LCS-W1	02/02/2012
$TRHC_6 - C_9$	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	103%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	102%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	103%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	99%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	106%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	103%
Surrogate Dibromofluoromethane	%		Org-016	102	[NT]	[NT]	LCS-W1	105%
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	LCS-W1	99%
Surrogate 4-BFB	%		Org-016	98	[NT]	[NT]	LCS-W1	100%
QUALITY CONTROL sTRH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ǁ Duplicate ǁ %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/02/2012	[NT]	[NT]	LCS-W1	06/02/2012
Date analysed	-			06/02/2012	[NT]	[NT]	LCS-W1	06/02/2012
$TRHC_{10} - C_{14}$	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	111%
$TRHC_{15} - C_{28}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	137%
$TRHC_{29} - C_{36}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	111%
Surrogate o-Terphenyl	%		Org-003	97	[NT]	[NT]	LCS-W1	114%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ǁ Duplicate ǁ %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/02/2012	[NT]	[NT]	LCS-W1	06/02/2012
Date analysed	-			07/02/2012	[NT]	[NT]	LCS-W1	07/02/2012
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	100%
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	104%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	99%
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	101%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	111%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	101%
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	98%
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	83	[NT]	[NT]	LCS-W1	102%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			2/2/2012	[NT]	[NT]	LCS-W1	2/2/2012
Date analysed	-			2/2/2012	[NT]	[NT]	LCS-W1	2/2/2012
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	107%

Report Comments:

Total Recoverable Hydrocarbons (volatile) in water:PQL has been raised due to the sample matrix requiring dilution.

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:

Douglas Partners Pty Ltd Smeaton Grange
Unit 5/50 Topham Rd
Smeaton Grange NSW 2567

ph: 02 4647 0075
Fax: 02 4646 1886

Attention: Michael Gol

Sample log in details:

Your reference:	**34275.02, Campbelltown Hospital**
Envirolab Reference:	**68400**
Date received:	01/02/2012
Date results expected to be reported:	**9/02/12**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	7 Waters
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice Pack

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

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Campbelltown Hospital, Phase 2 Contamination Assessment	**Sampler:**	BAH	**To:**	Envirolab Services
Project No:	34275.02	**Mob. Phone:**	0408 762 036		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	CCK			**Attn:**	Alien Hie
Email:	Michael.Gol@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	ahie@envirolabservices.com.au

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Lead	TRH and BTEX	PAH							Notes/preservation
GWMW101	1	31/01/2012	W	G,P	x	x	x							
GWMW102	2	31/01/2012	W	G,P		x	x							
GWMW103	3	31/01/2012	W	G,P	x	x	x							
GWMW104	4	31/01/2012	W	G,P	x	x	x							
GWMW105	5	31/01/2012	W	G,P	x	x	x							
GWMW106	6	31/01/2012	W	G,P	x	x	x							
GWBD1/31012012	7	31/01/2012	W	G,P	x		x							

Environmental Laboratory Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 68400
Date Received: 1/2/12
Time Received: 7.30pm
Received by: TA
Temp: (Cool/Ambient)
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address**	Unit 5, 50 Topham Road, Smeaton Grange 2567	**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	MG			**Transported to laboratory by:**	Mail Courier
Signed:		**Date & Time:**	01.02.12	**Received by:**	TANIA NOTARAS

Form COC

ANALYTICAL REPORT

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Chris Kline	Manager	Huong Crawford
Client	Douglas Partners Pty Ltd	Laboratory	SGS Alexandria Environmental
Address	Unit 5 50 Topham Road NSW 2567	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4647 0075	Telephone	+61 2 8594 0400
Facsimile	02 4646 1886	Facsimile	+61 2 8594 0499
Email	chris.kline@douglaspartners.com.au	Email	au.environmental.sydney@sgs.com
Project	**34275.02 - Campbelltown Hospital**	SGS Reference	SE105081 R0
Order Number	(Not specified)	Report Number	0000017692
Samples	2	Date Reported	08 Feb 2012
		Date Received	01 Feb 2012

COMMENTS

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

TRH(C6-C9)/BTEX subcontracted to SGS Perth Environmental, 10 Reid Rd Newburn WA, NATA Accreditation Number 2562, Site Number 898.

Site: Phase 2 Contamination assessment, Campbelltown Hospital.
A portion of the sample supplied has been sub-sampled for asbestos according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.
No respirable fibres detected using trace analysis technique.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Andy Sutton
Organics Chemist

Dong Liang
Inorganics Metals Team Leader

Huong Crawford
Laboratory Manager

Ravee Sivasubramaniam
Hygienist

Parameter	Units	LOR	Sample Number: SE105081.001 Sample Matrix: Soil Sample Date: 25 Jan 2012 Sample Name: BD3/250112	Sample Number: SE105081.002 Sample Matrix: Soil Sample Date: 25 Jan 2012 Sample Name: BD4/230112
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	-
Surrogates				
TRH (Surrogate)	%	-	-	-
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	<0.1	-
Acenaphthene	mg/kg	0.1	<0.1	-
Fluorene	mg/kg	0.1	<0.1	-
Phenanthrene	mg/kg	0.1	<0.1	-
Anthracene	mg/kg	0.1	<0.1	-
Fluoranthene	mg/kg	0.1	<0.1	-
Pyrene	mg/kg	0.1	<0.1	-
Benzo(a)anthracene	mg/kg	0.1	<0.1	-
Chrysene	mg/kg	0.1	<0.1	-
Benzo(b)fluoranthene	mg/kg	0.1	<0.1	-
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	-
Benzo(a)pyrene	mg/kg	0.1	<0.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	-
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	-
Benzo(ghi)perylene	mg/kg	0.1	<0.1	-
Total PAH	mg/kg	0.8	<0.8	-
Surrogates				
d5-nitrobenzene (Surrogate)	%	-	**76**	-
2-fluorobiphenyl (Surrogate)	%	-	**84**	-
d14-p-terphenyl (Surrogate)	%	-	**106**	-
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320				
Arsenic, As	mg/kg	3	**5**	**5**
Cadmium, Cd	mg/kg	0.3	**0.5**	**0.4**
Chromium, Cr	mg/kg	0.3	**6.2**	**13**
Copper, Cu	mg/kg	0.5	**37**	**31**
Lead, Pb	mg/kg	1	**21**	**27**
Nickel, Ni	mg/kg	0.5	**23**	**13**
Zinc, Zn	mg/kg	0.5	**72**	**56**

Parameter	Units	LOR	Sample Number: SE105081.001 Sample Matrix: Soil Sample Date: 25 Jan 2012 Sample Name: BD3/250112	Sample Number: SE105081.002 Sample Matrix: Soil Sample Date: 25 Jan 2012 Sample Name: BD4/230112
Mercury in Soil Method: AN312				
Mercury	mg/kg	0.05	<0.05	<0.05
Fibre Identification in soil Method: AN602				
FibreID				
Asbestos Detected	No unit	-	-	No
SemiQuant				
Estimated Fibres	%w/w	0.01	-	<0.01
Moisture Content Method: AN234				
% Moisture	%	0.5	**7.7**	**11**

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	LB013506	mg/kg	0.05	<0.05	0%	109%	92%

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

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB013391	%	0.5	2 - 5%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB013281	mg/kg	0.1	<0.1	0%	97%	116%
2-methylnaphthalene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB013281	mg/kg	0.1	<0.1	0%	97%	109%
Acenaphthene	LB013281	mg/kg	0.1	<0.1	0%	109%	127%
Fluorene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB013281	mg/kg	0.1	<0.1	0%	104%	119%
Anthracene	LB013281	mg/kg	0.1	<0.1	0%	108%	122%
Fluoranthene	LB013281	mg/kg	0.1	<0.1	0%	105%	120%
Pyrene	LB013281	mg/kg	0.1	<0.1	0%	110%	127%
Benzo(a)anthracene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Chrysene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(b)fluoranthene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(k)fluoranthene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(a)pyrene	LB013281	mg/kg	0.1	<0.1	0%	115%	132%
Indeno(1,2,3-cd)pyrene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Dibenzo(a&h)anthracene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB013281	mg/kg	0.1	<0.1	0%	NA	NA
Total PAH	LB013281	mg/kg	0.8	<0.8	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB013281	%	-	79%	7%	100%	112%
2-fluorobiphenyl (Surrogate)	LB013281	%	-	71%	8%	95%	107%
d14-p-terphenyl (Surrogate)	LB013281	%	-	117%	7%	106%	119%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB013505	mg/kg	3	<3	5 - 7%	95%	91%
Cadmium, Cd	LB013505	mg/kg	0.3	<0.3	0 - 2%	97%	96%
Chromium, Cr	LB013505	mg/kg	0.3	<0.3	2 - 8%	95%	83%
Copper, Cu	LB013505	mg/kg	0.5	<0.5	1 - 13%	96%	16%
Lead, Pb	LB013505	mg/kg	1	<1	5 - 8%	97%	199%
Nickel, Ni	LB013505	mg/kg	0.5	<0.5	4 - 7%	97%	-10%
Zinc, Zn	LB013505	mg/kg	0.5	<0.5	7 - 9%	97%	59%

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 Soil **Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TRH C10-C14	LB013277	mg/kg	20	<20	100%
TRH C15-C28	LB013277	mg/kg	50	<50	103%
TRH C29-C36	LB013277	mg/kg	50	<50	93%

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.
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).
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

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
NVL	Not Validated

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

ANALYTICAL REPORT

CLIENT DETAILS

Contact	Chris Kline
Client	Douglas Partners Pty Ltd
Address	Unit 5 50 Topham Road SMEATON GRANGE NSW 2567
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Facsimile	02 4646 1886
Email	chris.kline@douglaspartners.com.au
Project	**34275.02 - Campbelltown Hospital**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
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SGS Reference	SE105081 R0
Report Number	0000017693
Date Reported	08/02/2012 20:03:41
Date Received	01 Feb 2012

COMMENTS

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

TRH(C6-C9)/BTEX subcontracted to SGS Perth Environmental, 10 Reid Rd Newburn WA, NATA Accreditation Number 2562, Site Number 898.

Site: Phase 2 Contamination assessment, Campbelltown Hospital.
A portion of the sample supplied has been sub-sampled for asbestos according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.
No respirable fibres detected using trace analysis technique.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Andy Sutton
Organics Chemist

Dong Liang
Inorganics Metals Team Leader

Huong Crawford
Laboratory Manager

Ravee Sivasubramaniam
Hygienist

ANALYTICAL REPORT

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE105081.002	BD4/230112	Soil	91 g Clay,soil,rocks	25 Jan 2012	No Asbestos Found Organic Fibres Detected	<0.01

METHOD SUMMARY

SE105081 R0

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite			

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarized light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

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

STATEMENT OF QA/QC PERFORMANCE

SE105081 R0

CLIENT DETAILS

Contact	Chris Kline
Client	Douglas Partners Pty Ltd
Address	Unit 5 50 Topham Road NSW 2567
Telephone	02 4647 0075
Facsimile	02 4646 1886
Email	chris.kline@douglaspartners.com.au
Project	**34275.02 - Campbelltown Hospital**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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Email	au.environmental.sydney@sgs.com
SGS Reference	SE105081 R0
Report Number	0000017691
Date Reported	08 Feb 2012

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS Environmental Services' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	4 items

SAMPLE SUMMARY

Sample counts by matrix	2 Soils	Type of documentation received	COC
Date documentation received	1/2/2012	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	2.8°C
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		

HOLDING TIME SUMMARY

SE105081 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BD4/230112	SE105081.002	LB013657	25 Jan 2012	01 Feb 2012	24 Jan 2013	08 Feb 2012	24 Jan 2013	08 Feb 2012

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BD3/250112	SE105081.001	LB013506	25 Jan 2012	01 Feb 2012	22 Feb 2012	07 Feb 2012	22 Feb 2012	07 Feb 2012
BD4/230112	SE105081.002	LB013506	25 Jan 2012	01 Feb 2012	22 Feb 2012	07 Feb 2012	22 Feb 2012	07 Feb 2012

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BD3/250112	SE105081.001	LB013391	25 Jan 2012	01 Feb 2012	08 Feb 2012	03 Feb 2012	08 Feb 2012	06 Feb 2012
BD4/230112	SE105081.002	LB013391	25 Jan 2012	01 Feb 2012	08 Feb 2012	03 Feb 2012	08 Feb 2012	06 Feb 2012

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BD3/250112	SE105081.001	LB013281	25 Jan 2012	01 Feb 2012	08 Feb 2012	01 Feb 2012	12 Mar 2012	03 Feb 2012

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BD3/250112	SE105081.001	LB013505	25 Jan 2012	01 Feb 2012	23 Jul 2012	07 Feb 2012	23 Jul 2012	07 Feb 2012
BD4/230112	SE105081.002	LB013505	25 Jan 2012	01 Feb 2012	23 Jul 2012	07 Feb 2012	23 Jul 2012	07 Feb 2012

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BD3/250112	SE105081.001	LB013277	25 Jan 2012	01 Feb 2012	08 Feb 2012	01 Feb 2012	12 Mar 2012	08 Feb 2012

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BD3/250112	SE105081.001	%	60 - 130%	84
d14-p-terphenyl (Surrogate)	BD3/250112	SE105081.001	%	60 - 130%	106
d5-nitrobenzene (Surrogate)	BD3/250112	SE105081.001	%	60 - 130%	76

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB013506.001	Mercury	mg/kg	0.05	<0.05

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB013281.001		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	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	79
		2-fluorobiphenyl (Surrogate)	%	-	71
		d14-p-terphenyl (Surrogate)	%	-	117

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB013505.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB013277.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	50	<50
	TRH C29-C36	mg/kg	50	<50

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE105070.029	LB013506.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE105082.002	LB013506.020	Mercury	mg/kg	0.05	<0.05	<0.05	161	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE105081.001	LB013391.011	% Moisture	%	0.5	7.7	7.6	37	2
SE105090.003	LB013391.020	% Moisture	%	0.5	16	15	33	5

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE105078.001	LB013281.011		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	%	-	89.0	83.0	30	7
			2-fluorobiphenyl (Surrogate)	%	-	83.0	77.0	30	8
			d14-p-terphenyl (Surrogate)	%	-	102.0	109.0	30	7

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE105070.029	LB013505.014	Arsenic, As	mg/kg	3	9	9	64	5
		Cadmium, Cd	mg/kg	0.3	0.4	0.4	115	2
		Chromium, Cr	mg/kg	0.3	20	18	32	8
		Copper, Cu	mg/kg	0.5	14	14	34	1
		Lead, Pb	mg/kg	1	20	21	35	5
		Nickel, Ni	mg/kg	0.5	5.4	5.9	39	7
		Zinc, Zn	mg/kg	0.5	25	27	32	7
SE105107.005	LB013505.029	Arsenic, As	mg/kg	3	5	4	97	7
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	154	0
		Chromium, Cr	mg/kg	0.3	21	21	31	2
		Copper, Cu	mg/kg	0.5	29	26	32	13
		Lead, Pb	mg/kg	1	8	7	43	8
		Nickel, Ni	mg/kg	0.5	16	17	33	4
		Zinc, Zn	mg/kg	0.5	88	80	31	9

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB013506.002	Mercury	mg/kg	0.05	0.22	0.2	70 - 130	109

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB013281.002	Naphthalene	mg/kg	0.1	3.9	4	60 - 140	97
	Acenaphthylene	mg/kg	0.1	3.9	4	60 - 140	97
	Acenaphthene	mg/kg	0.1	4.4	4	60 - 140	109
	Phenanthrene	mg/kg	0.1	4.2	4	60 - 140	104
	Anthracene	mg/kg	0.1	4.3	4	60 - 140	108
	Fluoranthene	mg/kg	0.1	4.2	4	60 - 140	105
	Pyrene	mg/kg	0.1	4.4	4	60 - 140	110
	Benzo(a)pyrene	mg/kg	0.1	4.6	4	60 - 140	115
Surrogates	d5-nitrobenzene (Surrogate)	%	-	100.0	100	60 - 140	100
	2-fluorobiphenyl (Surrogate)	%	-	95.0	100	60 - 140	95
	d14-p-terphenyl (Surrogate)	%	-	106.0	100	60 - 140	106

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB013505.002	Arsenic, As	mg/kg	3	47	50	80 - 120	95
	Cadmium, Cd	mg/kg	0.3	48	50	80 - 120	97
	Chromium, Cr	mg/kg	0.3	48	50	80 - 120	95
	Copper, Cu	mg/kg	0.5	48	50	80 - 120	96
	Lead, Pb	mg/kg	1	48	50	80 - 120	97
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	97
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	97

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB013277.002	TRH C10-C14	mg/kg	20	40	40	60 - 140	100
	TRH C15-C28	mg/kg	50	<50	40	60 - 140	103
	TRH C29-C36	mg/kg	50	<50	40	60 - 140	93

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub -sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE105050.001	LB013506.004	Mercury	mg/kg	0.05	0.20	<0.05	0.2	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE105077.015	LB013281.005		Naphthalene	mg/kg	0.1	4.6	<0.1	4	116
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	4.4	<0.1	4	109
			Acenaphthene	mg/kg	0.1	5.1	<0.1	4	127
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	4.8	<0.1	4	119
			Anthracene	mg/kg	0.1	4.9	<0.1	4	122
			Fluoranthene	mg/kg	0.1	4.8	<0.1	4	120
			Pyrene	mg/kg	0.1	5.1	<0.1	4	127
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	5.3	<0.1	4	132
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Total PAH	mg/kg	0.8	39	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	%	-	112.0	94.0	100	112
			2-fluorobiphenyl (Surrogate)	%	-	107.0	91.0	100	107
			d14-p-terphenyl (Surrogate)	%	-	119.0	103.0	100	119

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE105050.001	LB013505.004	Arsenic, As	mg/kg	3	55	10	50	91
		Cadmium, Cd	mg/kg	0.3	48	<0.3	50	96
		Chromium, Cr	mg/kg	0.3	68	26	50	83
		Copper, Cu	mg/kg	0.5	240	230	50	16 ⑤
		Lead, Pb	mg/kg	1	360	260	50	199 ⑤
		Nickel, Ni	mg/kg	0.5	150	160	50	-10 ⑤
		Zinc, Zn	mg/kg	0.5	96	67	50	59 ⑤

MATRIX SPIKE DUPLICATES

SE105081 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC 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

*	Non-accredited analysis.
-	Sample not analysed for this analyte.
^	Analysis performed by external laboratory.

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	Refer to Analytical Report comments for further information.

SAMPLE RECEIPT ADVICE

SE105081

CLIENT DETAILS

Contact	Michael Gol
Client	Douglas Partners Pty Ltd
Address	Unit 5 50 Topham Road SMEATON GRANGE NSW 2567
Telephone	02 4647 0075
Facsimile	02 4646 1886
Email	michael.gol@douglaspartners.com.au
Project	**34275.02 - Campbelltown Hospital**
Order Number	(Not specified)
Samples	2

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 1/2/2012
Report Due	Wed 8/2/2012
SGS Reference	**SE105081**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Wednesday 1/2/2012. Results are expected to be ready by Wednesday 8/2/2012. Please quote SGS reference SE105081 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Soils	Type of documentation received	COC
Date documentation received	1/2/2012	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	2.8°C
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

Site: Phase 2 Contamination assessment, Campbelltown Hospital.
TRH(C6-C9)/BTEX subcontracted to SGS Perth Environmental, 10 Reid Rd Newburn WA, NATA Accreditation Number 2562, Site Number 898.
Results expected to be delayed.

SAMPLE RECEIPT ADVICE

SE105081

CLIENT DETAILS

Client	Douglas Partners Pty Ltd	Project	34275.02 - Campbelltown Hospital

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	PAH (Polynuclear Aromatic Hydrocarbons) in	Total Recoverable Metals in Soil by ICPOES from	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BD3/250112	-	1	1	22	7	4	12	6
002	BD4/230112	2	1	1	-	7	-	-	-

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.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	Phase 2 Contamination assessment, Campbelltown Hospital			**To:**	Envirolab Services
Project No:	34275.02	**Sampler:**	BAH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	CCK	**Mob. Phone:**	0408 762 036	**Attn:**	Alien Hie
Email:	Michael.Gol@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	ahie@envirolabservices.com.au

	Sample ID	Lab ID	Sampling Date	Sample Type: S - soil W - water	Container Type: G - glass P - plastic	Analytes: 8 Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols			Asbestos		Notes/preservation
14	BH130/4.9-5.0		25.01.2012	S	G, P	x		x	x						Combo 3
15	BH131/0.1-0.2		25.01.2012	S	G, P	x							x		
16	BH131/2.5-2.6		25.01.2012	S	G, P	x									
17	BH132/0.5-0.6		25.01.2012	S	G, P	x							x		
18	BH132/2.5-2.6		25.01.2012	S	G, P	x									
19	BH133/0.5-0.6		25.01.2012	S	G, P								x		
20	BH133/2.5-2.6		25.01.2012	S	G, P	x		x	x						Combo 3
21	BH134/3.0-3.1		25.01.2012	S	G, P	x		x	x						Combo 3
22	BH135/0.1-0.2		25.01.2012	S	G, P	x							x		
23	BH136/1.0-1.1		25.01.2012	S	G, P	x		x	x						Combo 3
1 24	BD3/250112		25.01.2012	S	G	x		x	x						Inter Lab Duplicate (SGS)
2 25	BD4/230112		23.01.2012	S	G	x							x		Inter Lab Duplicate (SGS)

SGS
Received 01/2/12
Temperature on Receipt: 3.8
SE105081

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	MG		**Transported to laboratory by:**		
Signed:		**Date & Time:** 31.01.2012	**Received by:**	01/2/12	

1836

SGS

AUSTRALIA – ENVIRONMENTAL SERVICES SYDNEY – PROFORMA FORM

SAMPLE INFORMATION

Approved: D. Liang

JOB No. SE 105081

Sample No.	P 100ml UP	P 250ml UP	P 500ml UP	P 1L UP	G 100 Amber UP	G 200 Amber UP	G 500 Amber UP	G 1L Amber UP	G 40ml vial Up	G 40ml Vial HCl	P 100ml HCl	G 40ml Vial H2SO4	P 100ml H2SO4	P 250ml H2SO4	G 500ml Amber H2SO4	G 1L H2SO4	P 100/250ml HN03 Total	P 100ml HN03 Filtered	P 250ml NaOH	P 250ml Zn Acetate	Plastic Bag	G 250ml Soil Jar				Sample Matrix	Lab Bottles Supplied By	Comments
1-2																						1				Soil	Envirolab	Full

Quality Assurance and Quality Control Assessment

1. Field QA/QC

Field QA/QC included sample transportation under Chain-of-Custody procedures. Completed Chain-of-Custody documentation and Sample Receipt Confirmation forms describing the condition of the samples upon arrival at the contract laboratory are attached with the Laboratory Reports.

1.1 Relative Percentage Difference

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

One inter-laboratory soil duplicate (BD3/250112) one intra-laboratory soil duplicate (BD6/23122011) and one intra-laboratory groundwater duplicate (GWBD1/31012012) were collected to assess the repeatability of the laboratory result as a measure of the representativeness of sampling techniques.

The comparative results of analysis between original and duplicate samples for soil is summarised in Table QA1 and for water in QA2 below:

Table QA1: RPD Results for Soil Duplicate (mg/kg)

Sample	Heavy Metals							
	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
BH132/0.5-0.6	6	0.6	6	50	23	<0.1	28	84
BD3/250112	5	0.5	6.2	37	21	<0.05	23	72
Difference	1	0.1	-0.2	13	2	0	5	12
RPD (%)	18	18	-3	30	9	0	20	15
BH128/0.5	5	<0.5	13	38	31	<0.1	17	65
BD6/23122011	7	<0.5	16	31	33	<0.1	16	54
Difference	-2	0	-3	7	-2	0	1	11
RPD (%)	-33	0	-21	20	-6	0	6	18

Sample ID	TPH				Benzene	Toluene	Ethylbenzene	Total Xylene
	C6-C9	C10-C14	C15-C28	C29-C36				
BH128/0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL
BD6/23122011	<25	<50	<100	<100	<0.2	<0.5	<1	<PQL
Difference	0	0	0	0	0	0	0	0
RPD (%)	0	0	0	0	0	0	0	0

Table QA2: RPD Results for Groundwater Duplicate (µg/L)

Sample ID	Pb	PAH	
		Naphthalene	totalb
GWMW104	1	<1	<PQL
GWBD1/31012012	<1	<1	<PQL
Difference	0	0	0
RPD (%)	0	0	0

All calculated RPD values were within the acceptable range of ± 30% with the exception of arsenic and copper in soils. The results of the RPD exceedance can be attributed to a number of reasons. The first being that the sample is a duplicate as opposed to a replicate. Replicates are not taken due to the mixing process used to take replicates and the possibility of allowing volatiles to escape. The second reason is the heterogeneity of metals in shallow soil or fill samples. However, the main reason in this instance is the fact that the detections themselves are very low which means the smaller variance will produce a larger RPD providing a un representative RPD. Therefor the large RPD is not significant and does not materially affect the assessment of the analytical results and that an acceptable consistency between the sample and their duplicate which has been achieved and that a suitable field sampling methodology was adopted and laboratory precision was achieved.

2. Laboratory QA/QC

The following QA/QC procedures were conducted by the laboratory.

2.1 Reagent Blank

This sample is prepared and analysed at the beginning of every analytical run, following calibration of the analytical apparatus. The laboratory results for reagent blanks indicated concentrations of all analytes to be below laboratory detection limits. These results are included in the laboratory report.

2.2 Spike Recovery

This is a sample replicate prepared by adding a known amount of analyte prior to analysis, and then treated exactly the same as all other samples. The recovery result indicates the proportion of the known concentration of the analyte that is detected during analysis. These results are included in the laboratory report. Spike recoveries were all within the acceptable range specified by Envirolab Services.

2.3 Surrogate Recovery

This sample is prepared by adding a known amount of surrogate, which behaves similarly to the analyte, prior to analysis to each sample. The recovery result indicates the proportion of the known concentration of the surrogate that is detected during analysis. These results are included in the laboratory report and are within acceptance limits as specified in Envirolab Services, indicating that the extraction technique was effective.

2.4 Duplicates

These are additional portions of a sample which are analysed in exactly the same manner as all other samples. The duplicate sample results are included in the laboratory results.