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SPECIALISTS IN LIVING AND WORKING PLACES

PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
MANILLA MPS / HEALTH ONE
COURT ST, MANILLA NSW

Prepared for:

Department of Commerce
54-56 Peel Street
TAMWORTH NSW 2340

Report Date: 15 July 2009
Project Ref: ENVIWARA00401AA-R01

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SPECIALISTS IN LIVING AND WORKING PLACES

15 July 2009

Department of Commerce
54-56 Peel Street
TAMWORTH NSW 2340

Attention: Steve Hansen

Dear Steve

RE: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
MANILLA MPS / HEALTH ONE
COURT STREET, MANILLA NSW

Coffey Environments Pty Ltd is pleased to present the findings of our Phase 2 Environmental Site Assessment for the above project.

This report should be read in conjunction with the attached information sheet '*Important Information about your Coffey Environmental Report*'.

We trust that our report meets with your requirements. If you have any questions regarding this matter please contact the undersigned.

For and on behalf of Coffey Environments Pty Ltd

Emma Coleman
Environmental Scientist

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ABBREVIATIONS

AEC	Areas of Environmental Concern
AHD	Australian Height Datum
C6-C36	Hydrocarbon chainlength fraction
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CMP	Construction Management Plan
COC	Chain of Custody
DECC	Department of Environment and Climate Change
DOC	Department of Commerce
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
ID	Identification
LOR	Limit of Reporting
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
NATA	National Association of Testing Authorities
NEHF	National Environmental Health Forum
NEPM	National Environment Protection Measure
NSW	New South Wales
NSW EPA	Environment Protection Authority of New South Wales
OCP	Organochlorine Pesticide
OPP	Organophosphorous Pesticide
PACM	Potential asbestos containing material

PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionisation Detector
ppm	parts per million
ppmv	parts per million by volume
PQL	Practical Quantitation Limit
QA	Quality Assurance
QC	Quality Control
RAP	Remediation Action Plan
RPD	Relative Percent Difference
SB	Soil Bore
SMP	Site Management Plan
SOP	Standard Operating Procedures
SPT	Split tube sampler
TPH	Total Petroleum Hydrocarbon
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Coffey Environments Pty Ltd (Coffey) was commissioned by Department of Commerce (DOC) to carry out a Phase 2 Environmental Site Assessment (ESA) at the Manilla Hospital located at Court Street, Manilla, New South Wales (NSW).

Development of the site will consist of the demolition and removal of the existing hospital buildings and construction of a new Combined MPS / Health One centre.

The objective of the Phase 2 ESA is to assess the contamination status of the site, assess potential risk posed by contaminants to health and the environment, and provide adequate information for preparation of a remedial action plan (RAP). The work will be carried out in accordance with the relevant sections of NSW Department of Environment and Climate Change (DECC) Guidelines for Consultants Reporting on Contaminated Sites (1997) and NSW DECC Sampling Design Guidelines (1995).

Three previous investigations in regards to contamination have been carried out at the site. These include a Geotechnical Investigation by Network Geotechnics Pty Ltd, a Hazardous Material Survey by HLA EnviroSciences Pty Ltd, and a Stage 1 Preliminary Environmental Site Investigation by DOC.

The Stage 1 Preliminary Environmental Site Investigation carried out by DOC identified the following five Areas of Environmental Concern (AEC) on the site.

- Fill materials, both materials imported to the site and use of contaminated materials from on site;
- Ash from the incinerator and boiler which has been used as fill;
- Pest control under and around buildings and in garden areas;
- Building materials, including lead paints, galvanised steel and asbestos containing material;
- A diesel underground storage tank (UST) and associated pipe work.

Soil samples were collected from each AEC. The results of the laboratory testing undertaken during the Phase 2 ESA indicated that generally soil contamination consists of total petroleum hydrocarbons (TPH) in surface soils, and asbestos in fill materials. Polycyclic aromatic hydrocarbons (PAH) were also detected at concentrations below the nominated investigation levels in samples collected from the fill material encountered during the Phase 2 ESA. It is considered that the TPH contamination identified is likely to be from leaks and spills of oil and fuels used / stored at the site. The asbestos is likely to be derived from former demolished buildings and has been mixed in with fill material on the site.

The fill material identified on site during this Phase 2 ESA varied in depth from 0.3m to greater than 3.0m below ground surface. Fill materials were generally encountered at the rear (northern) side of the site and the thickness of fill material encountered, appeared to increase in the areas to the northeast.

Waste materials, including asbestos containing materials, were observed in the fill materials in the batter slope. Ash from the boiler and/or incinerator were also observed in fill materials intersected in soil bores, generally at locations within the batter slope, which were completed as part of this Phase 2 ESA.

Given the variability of the fill materials encountered during this Phase 2 ESA, it is possible that contamination may be present in fill materials that were not sampled and analysed during the assessment.

In addition to the above, due to the nature of contamination typically caused by release of petroleum products from USTs and associated infrastructure, it is likely that additional petroleum hydrocarbon contamination is located in the soil immediately adjacent and underneath the UST, which could not be sampled during this Phase 2 ESA due to potential damage that could be caused to the UST and associated infrastructure.

Based on the results obtained during this Phase 2 ESA, the nature of contamination associated with USTs and associated infrastructure, and the variability of the fill materials encountered, Coffey recommends that a combination of remediation works and management procedures be implemented at the site during site redevelopment.

Remediation works would initially involve:

- The decommissioning and removal of the UST and associated infrastructure, and the removal of petroleum hydrocarbon contaminated soil adjacent to the workshop. Subsequent remediation of contaminated soil may involve either treatment (on or off site) or offsite disposal. A suitably qualified person should be present during the removal of the UST and associated infrastructure for the purpose of identifying and sampling potentially impacted soil that may be encountered during these works; and,
- Capping of fill materials on the steep northern batter slope to prevent exposure to people undertaking routine activities on the site. Capping would likely be with dense vegetation and a fence around the site, or using a geofabric where vegetation was not sustainable. Capping of the fill materials will require a site management plan to be prepared and maintained by a responsible person on site. Information about the contamination, its location and the implementation of a site management plan should also be provided to Tamworth Regional Council.

Coffey recommends the following for DOC consideration.

- Maintain and update the hazardous material register for the site. This would include adding the fill material identified along the face of the batter. Asbestos was found at 1.0m depth at TP3 location in the steep batter slope fill;
- Appropriate management of hazardous materials during demolition of the buildings;
- Preparation of a RAP, which will outline the remediation goals, methods of remediation and validation requirements. This would include information on removal of the USTs, removal and/or remediation of contaminated soils, and other information;
- Implementation of the RAP to remediate the site for the proposed development so that the site is suitable for its intended use;
- Preparation and implementation of a site management plan (SMP) to manage and maintain the cap on the steep batter slope and associated fill material that may be present immediately south of the hospital ring road; and,
- Preparation and implementation of a construction management plan (CMP) to provide guidance on the appropriate management of contaminated fill materials on the site during construction of the MPS / Health One centre.

The attached “Important Information about your Coffey Environmental Report” should be read with this report.

1 INTRODUCTION

1.1 Background

This report presents the findings of the Phase 2 Environmental Site Assessment (ESA) undertaken by Coffey Environments Pty Ltd at the Manilla Hospital located at Court Street, Manilla, New South Wales (NSW) (Figure 1).

The work was commissioned by Department of Commerce (DOC), in response to a proposal submitted by Coffey Environments on 22 April 2009 (ref: ENVIWARA00401AA-P02).

Three previous investigations in regards to contamination have been carried out at the site. These include a Geotechnical Investigation by Network Geotechnics Pty Ltd, a Hazardous Material Survey by HLA EnviroSciences Pty Ltd, and a Stage 1 Preliminary Environmental Site Investigation by DOC. Further information on these investigations is presented in Section 2 below.

It is understood that the development will consist of the demolition and removal of the existing hospital buildings and construction of a new Combined MPS / Health One centre. A Phase 2 ESA was required to aid in the design of the proposed development and to provide information for preparation of a remedial action plan (RAP) (if required).

1.2 Objectives and Scope of Work

The objective of the Phase 2 ESA is to assess the contamination status of the site, assess potential risk posed by contaminants to health and the environment and provide adequate information for preparation of a RAP (if required). The work will be carried out in accordance with the relevant sections of NSW Department of Environment and Climate Change (DECC) Guidelines for Consultants Reporting on Contaminated Sites (1997) and NSW DECC Sampling Design Guidelines (1995).

The objectives of the Phase 2 ESA were addressed through the following scope of works.

- Review of Network Geotechnics Pty Ltd, HLA-Envirosciences Pty Ltd, and DOC reports;
- Field work, including:
  - a site visit to check locations of the nominated areas of environmental concern (AEC) and to confirm sampling locations;
  - guiding the excavation of four test pits and drilling of eight boreholes, and associated collection of soil samples; and
  - collection of surface soil samples using hand tools from 14 locations.
- Laboratory analysis of selected soil samples for potential contaminants of concern;
- Data assessment and reporting.

2 PREVIOUS INVESTIGATIONS

2.1 Network Geotechnics, Geotechnical Investigation - September 2007

Network Geotechnics Pty Ltd (Network) conducted a Geotechnical Investigation at the Manilla District Hospital, Manilla NSW. The results of this investigation were reported in reference HGS1031, dated September 2007.

Network was commissioned by Hunter Geotechnics to review field and laboratory data collected by Hunter Geotechnics and to make recommendations for footing design and related geotechnical advice for the proposed redevelopment of the hospital.

The investigation by Hunter Geotechnics (in August 2007) consisted of the excavation of nine test pits to depths ranging from 1.5m to 3.0m. Laboratory testing of the samples collected included:

- Shrink swell index tests on three higher clay content samples to assess soil reactivity;
- Analysis of six samples for a suite including metals, phenols, organochlorine pesticides (OCP), poly-chlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAH); and
- Analysis of a piece of fibrous plaster for asbestos.

The test pit logs provided by Hunter Geotechnics indicated that the profile at the site was fill to depths up to 2.5m below ground surface (bgs), underlain by alluvial clayey gravel and mudstone. The fill was noted as containing building waste and ash.

The piece of fibrous material encountered during the investigation works was confirmed as being asbestos and concentrations of other chemicals of potential concern were below the National Environmental Protection Measure (NEPM) guidelines that were adopted for the purpose of the Network Geotechnics investigation. It is noted that the investigation criteria adopted (land use) from NEPM guidelines was not referenced in the report, however the concentrations reported were below the most stringent criteria of the NEPM guidelines.

Network Geotechnics concluded that because asbestos contaminated material and uncontrolled fill was identified, a detailed contamination assessment including a sample density of 25 samples per hectare was recommended.

2.2 HLA-Envirosciences, Hazardous Material Survey – September 2007

HLA Envirosciences Pty Limited (HLA) conducted a Hazardous Material Survey (HMS) and asbestos risk assessment for the Manilla Hospital site, Manilla NSW. The results of this investigation were reported in reference N2218201_HAZMAT_RPT, dated 4 September 2007.

The stated purpose of the HMS was ‘to identify the location, extent and condition of accessible asbestos based and other hazardous construction material present through the Hospital site’. Other hazardous materials addressed in the report were synthetic mineral fibres (SMF), lead based paint and PCB materials.

The report detailed the presence of hazardous material based on visual inspection and non destructive methods of accessible areas, in addition to laboratory testing of suspected hazardous materials.

Nineteen samples of suspected asbestos containing material was laboratory tested and eleven were reported as containing asbestos (chrysotile, amosite and / or crocidolite) in a number of building materials and areas within the site.

Seven samples of paint fragments were collected and tested for lead content from various areas of the site, with one testing positive for containing lead.

None of the fluorescent light fittings inspected were assessed as potentially containing PCB capacitors.

An appendix of the HLA report provided a Hazardous Material register, detailing the survey findings including hazardous material identified or presumed, its location, the risk, and action level. For the specific information of the materials identified, the relevant areas/buildings, the assessed risk and the recommended actions, refer to the HLA HMS report.

2.3 Department of Commerce, Stage 1 Preliminary Environmental Site Investigation - December 2008

The Geotechnical and Environmental Unit of the DOC conducted the Stage 1 Preliminary Environmental Site Investigation (ESI) for the proposed redevelopment within the existing Manilla Hospital complex at Manilla, NSW. The results of the investigation were reported in reference 08-GO37B, dated December 2008.

The objective of the Phase 1 ESI was to identify past and present potentially contaminating activities, potential contaminants types, discuss site conditions, provide a preliminary assessment of site contamination and assess the need for further investigation.

The ESI consisted of a desktop study of the site history, site conditions and surrounding environment and geology and hydrogeology; a review of previous investigations conducted at the site (summarised in Sections 2.1 and 2.2 above) and identification of potential AECs and contaminants of concern.

The results of the Stage 1 ESI indicated that the site had been used as a hospital since about 1908 and prior to that was vacant Crown Land. Current and former infrastructure on the site included the following:

- Hospital buildings dating from early 1900's to mid 1900's;
- Coal bin and boiler;
- Former morgue;
- Current mortuary;
- Underground fuel storage tank;
- A former workshop was located to the west of the current workshop;
- A former incinerator.

The following potential sources of contamination and areas of environmental concern were identified:

- Imported fill materials, potentially containing a range of contaminants;
- Spreading of ash from the coal boilers;
- Underground fuel storage tank;
- Pest control around buildings;
- Galvanised iron sheds, carports, garages;
- Lead based paints on buildings;
- Asbestos containing debris in the surface soils and fill. Asbestos fragments were also observed in the subfloor of parts of the main hospital building and on the surface of the steep batter slope in the vicinity of the mortuary/coal bin.

The DOC recommended that a Phase 2 Detailed ESI be undertaken at the site.

3 SITE CONDITION AND SURROUNDING ENVIRONMENT

3.1 Site Identification

The site is located at the eastern end of Court Street, Manilla, NSW (Figure 1). The site consists of Lot 14 on registered plan DP 814059, and the north-western corner of Lot 13 on registered plan DP 814059. The site covers an area of approximately one hectare. The area of the site is shown on Figure 2.

3.2 Current Site Condition

The main features observed during the site visit and during field investigations are shown on Figure 2 and detailed below.

The site consists of a generally level area on the southern half, with a steep batter slope on the northern half. The batter slope is vegetated with bushes and trees. The level area of the site contains the hospital infrastructure.

The main hospital building is located in approximately the middle of the site, and a nurse's quarters building is located to the west of the main hospital building. These building are constructed of brick with an iron roof.

A mortuary is located immediately to the north of the main hospital building, and a workshop is located to the northeast of the main hospital building.

A coal bin, and underground storage tank (UST) is located to the north-northeast of the main hospital building.

A ring road, paved with bitumen, circles around the hospital infrastructure. A garden bed is located to the south of the main hospital building. The remainder of the hospital site, which is not covered with buildings, the ring road, or the garden bed, is generally grassed. There are areas of concrete paving around some of the buildings.

Two outlet pipes, presumed to be used for stormwater, are located on the western side of the steep batter slope. These are presumed to be the outlet for stormwater drains within the hospital grounds.

The upper part of the batter slope is partially constructed of fill material.

3.3 Current Surrounding Land Use

The land around the property is predominantly low density residential.

Residential properties are located to the north and west of the site. The east of the site is bounded by Kanangra Road, open space and residential properties. The site is bounded to the south by other parts of the existing Manilla Hospital, a water treatment plant, and residential properties.

3.4 Local Geology and Hydrogeology

The Manilla - Narrabri 1:250,000 geological map indicates that the site locality is underlain by the Lowana Formation, which consists of green-black siltstone and mudstone with thin white tuffaceous beds.

The nearest water course is the Namoi River which generally runs in an east-west direction located approximately 330m to the north of the site. The depth to groundwater below the site is not known.

A search of groundwater bores registered with Department of Water and Energy was carried out by DOC as part of the Stage 1 ESI. The search identified four registered bores within 500m of the site. Information on these bores is provided below.

TABLE 1: REGISTERED BORE SEARCH RESULTS

BORE ID	DEPTH OF BORE (M)	STANDING WATER LEVEL (M BGS)	APPROXIMATE DISTANCE AND DIRECTION FROM SITE (KM)	AUTHORISED USE
GW060682	76	NR	0.1 west	Domestic
GW902357	79.2	NR	0.3 northwest-west	Domestic Stock
GW585536	61	NR	0.15 south	NR
GW021704	10.7	7	0.5 northeast	Domestic Stock

Note: NR = not recorded

4 POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

Based on the Stage 1 ESI carried out by DOC, the identified potential AECs within the site are shown in Table 2.

TABLE 2: AREAS OF ENVIRONMENTAL CONCERN

POTENTIAL AECS	DESCRIPTION	COPCS**	LIKELIHOOD OF CONTAMINATION*	REMARKS
Fill materials	Contaminated fill may have been imported to the site. Contaminated materials on site may have been used for fill.	Metals, TPH, BTEX, PAH, OCP, PCB, Phenols, Asbestos	Low to Moderate	There was evidence of fill materials being present at the site during the Geotechnical Investigation undertaken by Network Geotechnics Pty Ltd. Asbestos was also identified in the fill material in one location.
Ash from the coal boiler and incinerator	Ash from the coal boiler and incinerator may have been spread across the site and used for fill material	Metals, PAH, dioxins / furans	Low to moderate	There was evidence of ash being present at the site during the Geotechnical Investigation undertaken by Network Geotechnics Pty Ltd.
Pest control	Pesticides may have been applied beneath current or former building slabs and floorboards and onto garden areas.	OCP, Metals	Low	Contamination, if present, is likely to be found within localised areas, limited to near surface soils.
Building materials	Leaching or weathering of contaminants potentially contained in building materials (i.e. lead from lead based paint, zinc from galvanised corrugated iron and asbestos from fibro sheeting) on current or former buildings.	Metals Asbestos	Moderate to High	If present, likely to be limited to near surface soil.s The hazardous material survey carried out by HLA EnviroSciences Pty Ltd identified asbestos and lead paint.
UST and associate pipe work	Leaks and/or spills from the diesel UST.	TPH, BTEX, PAH, Lead	High	Leaks and/or spills from USTs and associated pipe work are very common.

Notes:

* It is important to note that this is not an assessment of the financial risk associated with the AEC in the event contamination is detected, but a qualitative assessment of the probability of contamination being detected at the potential AEC based on the site history study.

**COPC - Chemicals of Potential Concern, Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc, BTEX - Benzene, Toluene, Ethylbenzene and Xylene , TPH - Total Petroleum Hydrocarbons
PAH - Polycyclic Aromatic Hydrocarbons
OCP - Organochlorine Pesticides, PCB – Polychlorinated Biphenyl

5 REGULATORY BACKGROUND AND APPLICABLE GUIDELINES

The investigation criteria for soil were established based on the following references:

- NSW DEC (2006) Guidelines for the NSW Auditor Scheme (Second Edition);
- NSW EPA (1994) Guidelines for Assessing Service Station Sites;
- NEPC (1999) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM); and
- NSW EPA (1985) Environmental Hazardous Waste Act, Chemical Control Order in Relation to Dioxin-Contaminated Waste.

Other references were used to supplement the above, where appropriate.

The NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme and the NEPM present health based investigation levels for different land-uses (e.g. industrial / commercial, residential, recreational etc.) as well as provisional phytotoxicity based investigation levels.

The site is proposed to be developed as a hospital which is considered to be consistent with a commercial land use. Consequently the human health based soil investigation levels (HILs) for commercial and industrial land-use, provided in Column 4 of Appendix II in the NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme (Second Edition) have been adopted as soil investigation levels for the purpose of this assessment. Phytotoxicity does not need to be considered for commercial / industrial land-use.

NSW EPA (2006) Guidelines do not provide threshold levels for volatile petroleum hydrocarbon compounds. NSW EPA (1994) Guidelines for Assessing Service Station Sites provide an indication of acceptable cleanup levels for petroleum hydrocarbons compounds at service station sites to be reused for sensitive land-uses. The EPA has advised that these guidelines should also be used for less sensitive land-uses. For semi-volatile petroleum hydrocarbons (C_{16} – C_{35} and >C_{35}) investigation levels are provided in the NSW EPA (2006) Guidelines, however, these are based on the NEPM health-based criteria, which require the laboratory analysis to unequivocally differentiate between aromatic and aliphatic compounds. If this cannot be done, then the C_{10} – C_{40} criteria in the service station guidelines should be applied. For this investigation, we have adopted the service station guidelines for all petroleum hydrocarbon fractions.

There are currently no national or DECC endorsed guidelines relating to human health of environmental investigation of material containing asbestos on sites. NSW DEC (2006) advice that until such guidelines become available, auditors must exercise their professional judgement when assessing if a site is suitable for a specific use in the light of evidence that asbestos may be a contaminant of concern. Where appropriate, NSW DEC (2006) states that NSW Health will provide advice to auditors on a case-by-case basis. The NSW DECC previously provided interim advice that “no asbestos in the soil at the surface is permitted”. Enhealth (2005) ‘Guidelines for Asbestos in the Non-Occupational Environment’, provides some guidance on assessing and managing asbestos in soil although does not provide a threshold concentration or investigation level for asbestos. Coffey Environments has adopted an asbestos investigation level of “non-detect” for this site.

The NSW EPA (1985) *Environmentally Hazardous Chemicals Act*, *Chemical Control Order in Relation to Dioxin-Contaminated Waste*, states a Dioxin-contaminated waste materials means those waste materials that, when tested using a method approved by the Commission [then the State Pollution Control Commission, which has been superseded by the EPA which is part of the DECC], are found to contain more than 1 part in 100 million by weight (i.e. 10^{-8} w/w or 10 ng/kg) of 2,3,7,8-tetrachlorodibenzo-p-dioxin. This has been adopted as the investigation level for this report.

The adopted soil investigation levels are included in Tables LR1 to LR3.

6 FIELD AND LABORATORY INVESTIGATIONS

6.1 General

The field investigation programme was designed based on information provided in the Stage 1 ESI undertaken by DOC, and a site walkover carried out at prior to fieldwork commencing on 4 May 2009. Selected sampling locations were targeted to assess specific potential AECs, such as adjacent to structures, adjacent to the UST, and in the former incinerator and workshop locations. Other sampling locations targeted site wide potential contamination issues such as the presence of fill material. No sampling was undertaken beneath buildings and no groundwater investigations were undertaken during the P2 ESA.

6.2 Soil Investigations

The field investigations were undertaken between 4 and 6 May 2008 by a Coffey Environments scientist. A total of 26 sampling locations were selected for onsite investigations. Eight boreholes (identified as SB1 to SB8 were drilled at the site with the aid of a drill rig, four test pits (identified as TP1 to TP4) were excavated with the aid of a mini-excavator, and 14 surface samples (identified as SS1 to SS14) were collected using hand tools.

The number of sampling locations selected for the field investigation complied with NSW EPA (1995) "Sampling Design Guidelines", which recommends a minimum of 21 sampling locations for a site with an area of one hectare, plus additional sample locations to target specific AECs.

The boreholes were drilled to depths ranging between 1.0m and 3.0m bgs. Boreholes were terminated at each location due to refusal on rock. Samples were collected at regular intervals, or where there was evidence of potential contamination. Samples were collected using a split-tube sampler, or off the auger in shallow soils.

The test pits were excavated to depths ranging between 2.0m and 3.0m bgs. Test pits TP1 and TP2 were terminated at 2.0m depth due to reaching the limit required (at least 1.0m into natural soils), and test pits TP3 and TP4 were terminated at 3.0m due to the limitations of the mini-excavator. Samples were collected at regular intervals, or where there was evidence of potential contamination. Samples were collected directly from the excavator bucket.

The surface samples were collected at a depth of 0.0-0.1m bgs. Samples were collected by digging a small hole with hand tools, and collecting a sample from the hole.

A clean pair of disposable gloves was used when handling each new sample. Each sample was divided into three sub-samples. One of the sub-samples was placed into a laboratory-supplied, acid-rinsed 250 ml glass jar and placed in an ice-chilled cooler box. The second sub-sample was placed in a plastic zip-lock bag for asbestos screening. The third sub-sample was bagged for field headspace screening.

Where ash was present a separate sample was collected and placed into a laboratory supplied glass jar.

A photo ionisation detector (PID) was used to screen the headspace gases of the bagged soil samples. The PID provides a semi-quantitative indication of the presence of ionisable volatile organic compounds in the soil. The PID had a 10.6eV lamp calibrated with isobutylene gas at 100ppm$_v$ prior to commencement of the fieldwork.

The sample locations are shown on Figure 3 and the borehole, test pit and surface sample logs are presented in Appendix A.

6.3 Field Quality Assurance / Quality Control

Sampling activities were generally based on procedures and protocols outlined in Coffey Environments standard operating procedures.

A spilt tube sampler (SPT) was used to collect samples from the boreholes, and hand tools were used to collect the surface samples. Samples from the test pits were collected directly from the excavator bucket. Sampling equipment was decontaminated between sample locations using a phosphate free detergent. A wash blank sample was collected for each day of sampling to assess the efficacy of field decontamination procedures. Two trip blank samples were transported with the samples and analysed as part of the sampling programme to assess potential volatile loss as a result of sample handling and transportation procedures. A clean pair of disposable gloves was used to handle each sample.

The samples were placed into a laboratory-supplied, acid-rinsed 250mL glass jars and placed in an ice-chilled cooler box for transport to the laboratory.

Ten intra-laboratory (duplicate) soil samples and five inter-laboratory (triplicate) soil samples were collected. Of these, three duplicate samples and one triplicate sample were subjected to laboratory analysis. For duplicate sampling, the soil sample was divided evenly between the glass jars using gloved hands. The soil was not homogenised prior to duplicate sampling to minimise the potential loss of volatiles from the soil sample. The duplicates and triplicate were used to check whether the sampling and laboratory procedures adequately reproduced results.

The field quality control samples are summarised below.

TABLE 3: SUMMARY OF QUALITY CONTROL SAMPLES

DUPLICATE SAMPLE	SAMPLE TYPE	DATE	INTRA/INTER-LAB	ANALYSIS
QC1	Duplicate of SB1 0.0-0.1m	5 May 2009	Intra-lab	TPH, BTEX, PAH, Metals, OCP, PCB
QC1A	Triplicate of SB1 0.0-0.1m	5 May 2009	Inter-lab	TPH, BTEX, PAH, Metals, OCP, PCB
QC6	Duplicate of SS1	6 May 2009	Intra-lab	TPH, BTEX, PAH, Metals, OCP
QC8	Duplicate of TP1 0.0-0.1	6 May 2009	Intra-lab	PAH, Metals, OCP, PCB
TB #1	Trip Blank	-	Intra-lab	BTEX
WTS #1	Trip Blank	-	Intra-lab	BTEX
QCA	Wash Blank	5 May 2009	Intra-lab	TPH, BTEX, PAH, Metals, OCP, PCB
QCB	Wash Blank	6 May 2009	Intra-lab	TPH, BTEX, PAH, Metals, OCP, PCB

6.4 Laboratory Analysis

Analytical Laboratories used by Coffey Environments for this investigation included:

- Primary Laboratory – SGS, Sydney;
- Triplicate Laboratory – MGT Environmental, Melbourne.

The above laboratories are NATA registered for the analysis undertaken. Soil samples from the field investigations were dispatched to the laboratories on 7 May 2009 under chain of custody conditions.

In total, 27 soil samples were selected for a range of laboratory analysis, summarised in Table 4, below.

TABLE 4: SUMMARY OF LABORATORY ANALYSIS

CONTAMINANT OF CONCERN	NUMBER OF SAMPLES ANALYSED
PAH	23
TPH	22
BTEX	22
Metals	27
OCPs	10
PCBs	4
Asbestos	9
Phenols	2
VHCs	2
Dioxins / furans*	1

Note: * - Dioxin/furan testing comprises analysis for a suite of polychlorinated dibenzo-*p*-dioxins and furans. The analytical results for the individual compounds are then multiplied by their relevant toxic equivalent factor according to J.A. van Zorge et al (Chemosphere 19 (1989), 1881-1895) to produce a I-TEQ concentration. The purpose of this calculation is to allow comparison of a number of detected dioxins and furans to the guideline value which relates to a single compound, 2,3,7,8-tetrachlorodibenzo-p-dioxin.

The remaining samples were held by the laboratory for future analysis, if required.

The analysis suite was generally based on the potential chemicals of concern identified during the site history review, summarised in Section 4. The soil samples were selected for analysis on the basis of field observation, as well as providing lateral and vertical distribution of sampling across the investigation area and specific AEC. Generally, one sample was selected from each sample location and two samples from 50% of the sampling locations for laboratory analysis.

7 RESULTS

7.1 Subsurface Conditions

Based on the boreholes and test pit observations the geology within the investigation area is consistent with the regional geology indicated by the Manilla - Narrabri 1:250,000 geological map.

Ash, likely to be from the incinerator, was noted in borehole SB7 and test pits TP3 and TP4. Waste materials, including brick and cement fragments, glass, plastic, timber, and ceramic pipe were noted in test pits TP1 and TP2. Potential asbestos containing material (PACM) was observed in TP3. No odours were noted during the sampling of soils.

Groundwater inflows were not encountered in any of the boreholes or test pits completed as part of this investigation.

The subsurface conditions encountered at the site have been summarised in Table 5 and the borehole and test pit logs are presented in Appendix A.

TABLE 5: SUMMARY OF SUB SURFACE CONDITIONS

GENERAL DESCRIPTION	LOCATION	TOP OF MATERIAL (M)	BASE OF MATERIAL (M)
Topsoil: Gravelly Sand, fine to medium grained, brown, fine gravel	SB1 & SB2	0.0	0.3
Bitumen	SB3, SB4, SB5, & SB6	0.0	0.1
Fill (general soil): Gravelly Sand, fine to medium grained, brown, fine gravel. Gravelly Clay (SB8 only), medium plasticity, orange/dark brown, fine gravel.	SB3, SB4, SB5, SB6, SB7 & SB8	0.0 to 0.1	0.3 to 2.5
Fill (containing waste materials): gravelly sand, fine to medium grained, brown/grey, fine to coarse gravel. Contains brick fragments, cement fragments, plastic, glass, ceramic pipe, metals, timber and PACM.	TP1, TP2, TP3 & TP4.	0.0 to 2.0	0.4 to 3.0
Fill (containing ash): gravelly sand, fine to medium grained, grey, fine to coarse gravel, 50% ash.	TP3 & TP4	0.0	0.1 to 2.0
Residual Soil: Gravelly Clay, Sandy Clay, medium to high plasticity, brown/orange, fine to medium grained gravel.	SB1, SB2, SB3, SB4, SB8, TP1 & TP2	0.3 to 0.9	0.8 to 1.6
Extremely Weathered Claystone: Gravelly Clay, medium to high plasticity, pale grey, pale to dark brown, orange, fine to medium grained gravel.	SB1, SB2, SB3, SB4, SB5, SB6, SB8, TP1 & TP2	0.8 to 2.5	1.0 to 3.0

7.1.1 PID Results

A total of 65 soil samples were subjected to PID headspace screening. The PID readings were detected between 1.5 to 15.8 ppm_v, indicating that volatile ionisable organic compounds were unlikely to be present at significant concentrations in the samples screened. The PID results are presented with the borehole, test pit and surface sample logs in Appendix A.

7.1.2 Laboratory Results

The laboratory analytical reports are presented in Appendix C. The soil results are presented in Table LR1 to LR4.

7.1.3 Quality Assurance and Quality Control (QAQC) Results and Data Usability

An assessment of quality assurance and quality control has been made in a data validation report presented in Appendix C. An assessment was made of data completeness, comparability, representativeness, precision and accuracy based on field and laboratory considerations.

The samples collected included collection of ten field duplicates and five triplicates. Of these, three duplicates and one triplicate were analysed. The results of the field duplicate and triplicate analysis showed the relative percent differences (RPDs) were generally within the 50% control limit, with the exception of the following.

- An RPD of 50% for lead between duplicate pair SB1 0.0-0.1 / QC1A;
- An RPD of 51% for zinc between duplicate pair SS1 / QC6;
- An RPD of 79% for TPH 15-28 between duplicate pair SS1 / QC6;
- An RD of 67% for benzo(g,h,i)perylene between duplicate pair TP1 0.0-0.1/ QC8.

Two wash blank samples were collected in the field, one for each day of sampling. The wash blanks were analysed for TPH, BTEX, PAH, metals, OCPs, and PCBs. The laboratory results showed concentrations of analytes below the detection limit in the wash blank, with the exception of zinc. It is considered that the zinc was probably present in the water used for the wash blank. Taking into account the concentrations of zinc in the samples, it is considered that its detection in the wash blank does not affect the usability of the data.

The results of the quality control testing are shown on Table LR4 attached

A data validation assessment was carried out, and is presented in Appendix C. The assessment revealed the following.

- Data Completeness – the data is adequately complete;
- Data Comparability – the data is adequately comparable;
- Data Representativeness – the data is adequately representative;
- Data Precision – the data is adequately precise;
- Data Accuracy – the data is adequately accurate.

7.2 Comparison of Soil Results with Human Health Based Soil Investigation Levels (HILs)

The results from the investigations have been compared to the relevant soil investigation levels, as discussed in Section 5 of this report, and are shown in Tables LR1 to LR3 and summarised below.

- TPH C_{10} – C_{36}) was detected in sample SB8 0.0-0.1 (2,375 mg/kg) at a concentration above the soil investigation level of 1,000 mg/kg. TPH C_{10} – C_{36} was also detected in samples SS1 (410mg/kg), SS6 (328mg/kg), SS10 (86mg/kg) and SS12 (370mg/kg) but at a concentrations below the soil investigation levels. TPH C_{10} – C_{36} was not detected above the laboratory reporting limits in the other samples analysed;
- Benzo(a)pyrene was detected in samples SS6 (4.4mg/kg), SB5 0.9-1.0 (0.11mg/kg), SB6 1.9-2.0 (0.05mg/kg), SB7 0.0-0.1 (0.1mg/kg) , TP1 0.0-0.1 (0.08mg/kg), and TP2 0.4-0.5 (0.06mg/kg), but at concentrations below the soil investigation level of 5mg/kg. Benzo(a)pyrene was not detected in the other samples analysed;
- Total PAHs were detected in samples SS6 (<47.68mg/kg), SB5 0.9-1.0 (0.27mg/kg), SB7 0.0-0.1 (0.25mg/kg), TP1 0.0-0.1 (<1.79mg/kg), and TP2 0.4-0.5 (<1.8mg/kg), but at concentrations below the soil investigation levels. PAHs were not detected above the laboratory reporting limits in the other samples analysed;
- Heavy metals were detected in samples that were analysed, but at concentrations below the soil investigation levels;
- Asbestos was detected in a sample of fibro collected from TP3 at 1.0m depth. The other soil samples analysed did not detect asbestos;
- TPH C_6-C_9, BTEX, OCPs, PCBs, VHCs and phenols were not detected in the samples analysed;
- The ash sample from TP3 0.4-0.5m was assessed to contain 0.067 to 2.3 ng/kg I-TEQ of 2,3,7,8-tetrachlorodibenzo-p-dioxin, which is below the investigation level adopted.

8 DISCUSSION

The Phase 1 ESI carried out by DOC identified five AEC on the site, these being the:

- fill materials, both imported materials and contaminated materials from on site;
- ash from the incinerator and boiler which has been used as fill;
- pest control under and around buildings and in garden areas;
- building materials, including lead paints, galvanised steel and asbestos containing material; and
- UST and associated pipe work.

During this Phase 2 ESA, soil samples were collected from each AEC. The results of the laboratory testing undertaken during the Phase 2 ESA indicated that generally soil contamination consists of TPH in surface soils, and asbestos in fill materials. PAH compounds were also detected at concentrations below the nominated investigation levels in samples collected of the fill material encountered during the Phase 2 ESA. It is considered that the TPH contamination identified is likely to be from leaks and spills of oil and fuels. The asbestos is likely to be derived from former demolished buildings and has been mixed into fill on the site. The PAH compounds detected in the fill materials are likely to be attributed to ash or oils within the fill material.

The fill material identified on site during this Phase 2 ESA varied in depth from 0.3m to greater than 3.0m below ground surface. Test pits TP3 and TP4 on the eastern side of the steep batter slope reached the limit of excavation in fill materials at 3.0m depth. Fill materials are generally located at the rear (northern) side of the site, and the thickness of fill material encountered, appeared to increase in areas to the northeast.

Waste materials, including asbestos containing materials, were observed in the fill materials in TP1, TP2, TP3 and TP4. Ash from the boiler and/or incinerator was observed in borehole SB7 at 0.9-1.0m, and in test pits TP3 at 0.0-0.1m, and TP4 at 0.0-2.0m.

Analysis of samples collected adjacent to the UST did not show contamination above the soil investigation levels. This indicates that soil contamination from the UST is unlikely to be widespread. Due to the nature of contamination caused by USTs and associated infrastructure, it is likely that contamination is located in the soils immediately adjacent to and underneath the UST, which could not be sampled during this Phase 2 ESA due to potential damage that could have been caused to the UST and associated infrastructure.

Sampling and analysis of groundwater was not undertaken as part of this assessment. Groundwater is likely to be of the vicinity of 10m or greater below the ground surface. Taking into account that contamination was not detected at depth during the Phase 2 ESA, there is no evidence to suggest that groundwater contamination is present beneath the site at this point in time. However, the potential for groundwater contamination should be reassessed following the removal of the UST, should significant contamination be encountered underneath the UST, and/or if contamination is identified at the site at depth.

9 CONCLUSIONS AND RECOMMENDATIONS

The Phase 2 ESA identified contamination at concentrations above nominated investigation levels in the form of asbestos and TPH at two sampling locations. The TPH was encountered in surface soils adjacent to the workshop and the asbestos was encountered in fill materials on the steep batter slope. Detections of PAH compounds were indentified in fill materials at concentrations below the investigation levels.

Given the variability of the fill materials encountered during this Phase 2 ESA, it is possible that contamination may be present in fill materials in areas that were not sampled and analysed during the assessment.

Due to the nature of contamination caused by USTs and associated infrastructure, it is possible that hydrocarbon contamination may be present within soils located immediately adjacent to and beneath the UST.

Based on the results obtained during this Phase 2 ESA, the nature of contamination associated with USTs and associated infrastructure, and the variability of the fill materials encountered, Coffey recommends that a combination of remediation works and management procedures be implemented at the site during site development.

Remediation works would initially involve:

- The decommissioning and removal of the UST and associated infrastructure, and the removal of TPH contaminated soil adjacent to the workshop. Remediation of hydrocarbon impacted soil may involve either treatment (on or off site) or offsite disposal. A suitably qualified person should be present during the removal of the UST and associated infrastructure for the purpose of identifying and sampling potentially impacted soil that may be encountered during these works; and,
- Capping of fill materials on the steep northern batter slope to prevent exposure to people undertaking routine activities on the site. Capping would likely be with dense vegetation and a fence around the site, or using a geofabric where vegetation was not sustainable. Capping of the fill materials will require a site management plan to be prepared and maintained by a responsible person on site. Information about the contamination, its location and the implementation of a site management plan should also be provided to Tamworth Regional Council.

Coffey recommends the following for DOC consideration.

- Maintain and update the hazardous material register for the site. This would include adding the fill material identified along the face of the batter. Asbestos was found at 1.0m depth at TP3 location in the steep batter slope fill;
- Appropriate management of hazardous materials during demolition of the buildings;
- Preparation of a RAP, which will outline the remediation goals, methods of remediation and validation requirements. This would include information on removal of the USTs, removal and/or remediation of contaminated soils, and other information;
- Instigation of the RAP to remediate the site for the proposed development so that the site does not pose a risk to human health or the environment;

- Preparation and implementation of a site management plan (SMP) to manage and maintain the cap on the steep batter slope and associated fill material that may be present immediately south of the hospital ring road; and;
- Preparation and implementation of a construction management plan (CMP) to provide guidance on the appropriate management of contamination in fill materials on the site during construction of the MPS / Health One centre.

The attached “Important Information about your Coffey Environmental Report” should be read with this report.

10 LIMITATIONS

The findings within this report are the result of discreet/specific sampling methodologies used in accordance with normal practices and standards. To the best of our knowledge they represent a reasonable interpretation of the general conditions of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

It is the nature of contaminated site investigations that the degree of variability in site conditions cannot be known completely and no sampling and analysis program can eliminate all uncertainty concerning the condition of the site. Professional judgement must be exercised in the collection and interpretation of the data.

In conducting this review and preparing the report, current guidelines for assessment and management of contaminated land were followed. This work has been conducted in good faith in accordance with Coffey's understanding of the client's brief and general accepted practice for environmental consulting.

This report was prepared for Department of Commerce with the objective of assessing the presence of contamination on the site for the development of the MPS / Health One centre. No warranty, expressed or implied, is made as to the information and professional advice included in this report. The report is not intended for other parties or other uses. Anyone using this document does so at their own risk and should satisfy themselves concerning the applicability of its application and where necessary should seek expert advice in relation to the particular situation.

This report does not cover hazardous building materials issues. Information within the report including borehole logs should not be used for geotechnical investigation purposes.

11 REFERENCES

Department of Commerce (2008) Stage 1 Preliminary Environmental Site Investigation, reference 08-GO37B

Department of Mineral Resources (1992) Manilla – Narrabri Metallogenic Series Sheet, SH56-9 SH55-12, First Edition, 1:250,000 scale

HLA Envirosciences Pty Ltd (2007) Hazardous Material Survey – Manila Hospital Site, Manilla NSW, reference N2218201_HAZMAT_RPT

Network Geotechnics Pty Ltd (2007) Proposed Extensions to Manilla Hospital – Report on Geotechnical Assessment, referenceHGS1031

NSW EPA (1995) Sampling Design Guidelines. ISBN 0-7310-3756-1.

NSW EPA (1997) Guidelines for Consultants Reporting on Contaminated Sites. ISBN 0 7310 3892 4.

NSW EPA (1994) Guidelines for Assessing Service Station Sites. ISBN 0-7310-3712-X.

NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme (2nd ed). ISBN 1 74137 859 1

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Important information about your **Coffey** Environmental Report

Uncertainties as to what lies below the ground on potentially contaminated sites can lead to remediation costs blow outs, reduction in the value of the land and to delays in the redevelopment of land. These uncertainties are an inherent part of dealing with land contamination. The following notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report has been written for a specific purpose

Your report has been developed on the basis of a specific purpose as understood by Coffey and applies only to the site or area investigated. For example, the purpose of your report may be:

- To assess the environmental effects of an on-going operation.
- To provide due diligence on behalf of a property vendor.
- To provide due diligence on behalf of a property purchaser.
- To provide information related to redevelopment of the site due to a proposed change in use, for example, industrial use to a residential use.
- To assess the existing baseline environmental, and sometimes geological and hydrological conditions or constraints of a site prior to an activity which may alter the sites environmental, geological or hydrological condition.

For each purpose, a specific approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible, quantify risks that both recognised and unrecognised contamination pose to the proposed activity. Such risks may be both financial (for example, clean up costs or limitations to the site use) and physical (for example, potential health risks to users of the site or the general public).

Scope of Investigations

The work was conducted, and the report has been prepared, in response to specific instructions from the client to whom this report is addressed, within practical time and budgetary constraints, and in reliance on certain data and information made available to Coffey. The analyses, evaluations, opinions and conclusions presented in this report are based on those instructions, requirements, data or information, and they could change if such instructions etc. are in fact inaccurate or incomplete.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man and may change with time. For example, groundwater levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project and/or on the property.

Interpretation of factual data

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from indirect field measurements and sometimes other reports on the site are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of Coffey through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other problems encountered on site.

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Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered with redevelopment or on-going use of the site. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. In particular, a due diligence report for a property vendor may not be suitable for satisfying the needs of a purchaser. Your report should not be applied for any purpose other than that originally specified at the time the report was issued.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other professionals who are affected by the report. Have Coffey explain the report implications to professionals affected by them and then review plans and specifications produced to see how they have incorporated the report findings.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel), field testing and laboratory evaluation of field samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Contact Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to land development and land use. It is common that not all approaches will be necessarily dealt with in your environmental site assessment report due to concepts proposed at that time. As a project progresses through planning and design toward construction and/or maintenance, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Environmental reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

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Tables

Table LR1
Laboratory Results-Boreholes
ENVIWARA00401AA

				Field ID	SB1	SB2	SB3	SB4	SB5	SB5	SB6	SB6	SB7	SB7	SB8	SB8
				Sample Depth (m)	0 - 0.1	0 - 0.1	0.4-0.5	0.1-0.2	0.9-1	2.9-3	0.4-0.5	1.9-2	0 - 0.1	0.9-1	0 - 0.1	0.4-0.5
				Sample Date	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09	05/05/09
Analytes		**Units**	**PQL**	**NSW Commercial F**												
BTEX	Benzene	mg/kg	0.5		<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Ethylbenzene	mg/kg	0.5		<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Toluene	mg/kg	0.5		<0.5	-	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Xylene (m & p)	mg/kg	1		<1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
	Xylene (o)	mg/kg	0.5		<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Xylene Total	mg/kg	1.5		<1.5	-	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	-
Metals	Arsenic	mg/kg	3	**500**	6	6	3	8	6	7	4	<3	4	4	3	4
	Cadmium	mg/kg	0.3	**100**	0.4	0.5	0.5	0.3	0.4	0.6	0.4	<0.3	0.4	0.4	0.3	0.4
	Chromium (III+VI)	mg/kg	0.3		20	23	10	15	16	20	14	11	21	17	14	21
	Copper	mg/kg	0.5	**5000**	20	22	33	19	26	56	64	8.6	20	20	18	24
	Lead	mg/kg	1	**1500**	20	12	28	9	280	9.3	59	4	17	24	4	7
	Nickel	mg/kg	0.5	**3000**	19	18	8.4	13	14	20	11	6.4	16	17	16	21
	Zinc	mg/kg	0.5	**35000**	58	46	73	35	150	65	120	16	120	44	32	34
	Mercury	mg/kg	0.05	**75**	<0.05	<0.05	0.08	<0.05	0.29	<0.05	0.53	<0.05	<0.05	<0.05	<0.05	<0.05
OCP	4,4-DDE	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	a-BHC	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Aldrin	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	b-BHC	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	cis-Chlordane	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	d-BHC	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	DDD	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	DDT	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Dieldrin	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Endosulfan I	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Endosulfan II	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Endosulfan sulphate	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Endrin	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Endrin aldehyde	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Endrin ketone	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	g-BHC (Lindane)	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Heptachlor	mg/kg	0.1	**50**	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Heptachlor epoxide	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Hexachlorobenzene	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Methoxychlor	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	o,p'-DDD	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	o,p'-DDE	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	o,p'DDT	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	trans-chlordane	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	trans-Nonachlor	mg/kg	0.1		<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-
	Aldrin + Dieldrin	mg/kg		**50**	<0.2	-	<0.2	-	-	-	-	-	-	-	<0.2	-
	DDT+DDE+DDD	mg/kg		**1000**	<0.3	-	<0.3	-	-	-	-	-	-	-	<0.3	-
PAHs	1-Methylnaphthalene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	2-methylnaphthalene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Acenaphthene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Acenaphthylene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Anthracene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Benz(a)anthracene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.12	<0.1	<0.1	-
	Benzo(a) pyrene	mg/kg	0.05	**5**	<0.05	-	<0.05	<0.05	0.11	<0.05	<0.05	0.05	0.1	<0.05	<0.05	-
	Benzo(b)&(k)fluoranthene	mg/kg	0.2		<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	-
	Benzo(g,h,i)perylene	mg/kg	0.1		<0.1	-	<0.1	<0.1	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Chrysene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.12	<0.1	<0.1	-
	Dibenz(a,h)anthracene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Fluoranthene	mg/kg	0.1		<0.1	-	<0.1	0.12	0.11	<0.1	<0.1	<0.1	0.25	<0.1	<0.1	-
	Fluorene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Naphthalene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	PAHs (Sum of total)	mg/kg	1.75	**100**	<1.75	-	<1.75	<1.77	<1.93	<1.75	<1.75	<1.75	<2.21	<1.75	<1.75	-
	Phenanthrene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.17	<0.1	<0.1	-
	Pyrene	mg/kg	0.1		<0.1	-	<0.1	<0.1	0.17	<0.1	<0.1	<0.1	0.25	<0.1	<0.1	-
PCBs	Arochlor 1221	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1016	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1232	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1242	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1248	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1254	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1260	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1262	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	Aroclor 1268	mg/kg	0.1		<0.1	-	-	-	-	-	-	-	-	-	<0.1	-
	PCBs (Sum of total)	mg/kg	0.9	**50**	<0.9	-	-	-	-	-	-	-	-	-	<0.9	-
Phenols	Phenolics Total	mg/kg	0.1		-	-	-	-	<0.1	-	-	-	<0.1	-	-	-
TRH	TPH C6 - C9 Fraction	mg/kg	20	**65**	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	-
	TPH C10 - C14 Fraction	mg/kg	20		<20	-	<20	<20	<20	<20	<20	<20	<20	<20	450	-
	TPH C15 - C28 Fraction	mg/kg	50		<50	-	<50	<50	<50	<50	<50	<50	<50	<50	1900	-
	TPH C29 - C36 Fraction	mg/kg	50		<50	-	<50	<50	<50	<50	<50	<50	<50	<50	<50	-
	TPH+C10 - C36 (Sum of total)	mg/kg		**1000**	<120	-	<120	<120	<120	<120	<120	<120	<120	<120	**2375**	-
VCHs	1,1,1,2-tetrachloroethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,1,1-trichloroethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,1,2,2-tetrachloroethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,1,2-trichloroethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,1-dichloroethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,1-dichloroethene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,1-dichloropropene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2,3-trichlorobenzene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2,3-trichloropropane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2,4-trichlorobenzene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2-dibromo-3-chloropropane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2-dibromoethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2-dichlorobenzene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2-dichloroethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,2-dichloropropane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,3-dichlorobenzene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,3-dichloropropane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	1,4-dichlorobenzene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	2,2-dichloropropane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	2-chlorotoluene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	4-chlorotoluene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Bromobenzene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Bromochloromethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Bromodichloromethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Bromoform	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Bromomethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Carbon tetrachloride	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Chlorobenzene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Chlorodibromomethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Chloroethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Chloroform	mg/kg	1		-	-	-	-	<1	-	-	-	<1	-	-	-
	Chloromethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	cis-1,2-dichloroethene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	cis-1,3-dichloropropene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Dibromomethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Dichlorodifluoromethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Hexachlorobutadiene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	TCE	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Tetrachloroethene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	trans-1,2-dichloroethene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	trans-1,3-dichloropropene	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Trichlorofluoromethane	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-
	Vinyl chloride	mg/kg	0.5		-	-	-	-	<0.5	-	-	-	<0.5	-	-	-

Soil Investigation Levels from:
NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme (2nd ed) - Appendix II, Commercial/Industrial Landuse
Bold Calculations exceed adopted NSW DEC (2006) investigation criteria

Table LR2
Laboratory Results- Surface Samples
ENVIWARA00401AA

				Field ID	SS-1	SS-3	SS-5	SS-6	SS-7	SS-9	SS-10	SS-11	SS-12	SS-14
				Sample Date	6/05/09	6/05/09	6/05/09	6/05/09	6/05/09	6/05/09	6/05/09	6/05/09	6/05/09	6/05/09
Analytes		**Units**	**PQL**	**NSW Commercial F**										
BTEX	Benzene	mg/kg	0.5		<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Ethylbenzene	mg/kg	0.5		<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Toluene	mg/kg	0.5		<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Xylene (m & p)	mg/kg	1		<1	-	<1	<1	<1	<1	<1	-	<1	<1
	Xylene (o)	mg/kg	0.5		<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Xylene Total	mg/kg	1.5		<1.5	-	<1.5	<1.5	<1.5	<1.5	<1.5	-	<1.5	<1.5
Metals	Arsenic	mg/kg	3	**500**	6	4	5	5	<3	7	5	4	4	5
	Cadmium	mg/kg	0.3	**100**	0.5	0.5	0.4	0.5	<0.3	0.5	0.3	<0.3	<0.3	<0.3
	Chromium (III+VI)	mg/kg	0.3		20	21	18	18	7.2	22	19	17	16	14
	Copper	mg/kg	0.5	**5000**	24	25	18	22	7.4	20	18	16	15	14
	Lead	mg/kg	1	**1500**	22	7	9	32	21	30	15	7	14	8
	Nickel	mg/kg	0.5	**3000**	13	24	18	18	3.7	14	19	17	15	14
	Zinc	mg/kg	0.5	**35000**	370	57	140	92	280	82	66	40	52	41
	Mercury	mg/kg	0.05	**75**	<0.05	<0.05	<0.05	0.09	<0.05	0.09	0.05	0.06	0.05	<0.05
OCP	4,4-DDE	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	a-BHC	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Aldrin	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	b-BHC	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	cis-Chlordane	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	d-BHC	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	DDD	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	DDT	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Dieldrin	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Endosulfan I	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Endosulfan II	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Endosulfan sulphate	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Endrin	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Endrin aldehyde	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Endrin ketone	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	g-BHC (Lindane)	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Heptachlor	mg/kg	0.1	**50**	<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Heptachlor epoxide	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Hexachlorobenzene	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Methoxychlor	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	o,p'-DDD	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	o,p'-DDE	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	o,p'DDT	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	trans-chlordane	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	trans-Nonachlor	mg/kg	0.1		<0.1	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1
	Aldrin + Dieldrin	mg/kg		**50**	<0.2	-	<0.2	-	-	<0.2	-	<0.2	-	<0.2
	DDT+DDE+DDD	mg/kg		**1000**	<0.3	-	<0.3	-	-	<0.3	-	<0.3	-	<0.3
PAHs	1-Methylnaphthalene	mg/kg	0.1		<0.1	-	<0.1	0.25	<0.1	<0.1	<0.1	-	<0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1		<0.1	-	<0.1	0.34	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Acenaphthene	mg/kg	0.1		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Acenaphthylene	mg/kg	0.1		<0.1	-	<0.1	0.27	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Anthracene	mg/kg	0.1		<0.1	-	<0.1	1.1	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Benz(a)anthracene	mg/kg	0.1		<0.1	-	<0.1	5.4	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Benzo(a) pyrene	mg/kg	0.05	**5**	<0.05	-	<0.05	4.4	<0.05	<0.05	<0.05	-	<0.05	<0.05
	Benzo(b)&(k)fluoranthene	mg/kg	0.2		<0.2	-	<0.2	11	<0.2	<0.2	<0.2	-	<0.2	<0.2
	Benzo(g,h,i)perylene	mg/kg	0.1		<0.1	-	<0.1	2.6	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Chrysene	mg/kg	0.1		<0.1	-	<0.1	4.4	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Dibenz(a,h)anthracene	mg/kg	0.1		<0.1	-	<0.1	0.66	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Fluoranthene	mg/kg	0.1		<0.1	-	<0.1	6.3	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Fluorene	mg/kg	0.1		<0.1	-	<0.1	0.21	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		<0.1	-	<0.1	2.9	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Naphthalene	mg/kg	0.1		<0.1	-	<0.1	0.24	<0.1	<0.1	<0.1	-	<0.1	<0.1
	PAHs (Sum of total)	mg/kg	1.75	**100**	<1.75	-	<1.75	<47.68	<1.75	<1.75	<1.75	-	<1.75	<1.75
	Phenanthrene	mg/kg	0.1		<0.1	-	<0.1	2.2	<0.1	<0.1	<0.1	-	<0.1	<0.1
	Pyrene	mg/kg	0.1		<0.1	-	<0.1	5.2	<0.1	<0.1	<0.1	-	<0.1	<0.1
PCBs	Arochlor 1221	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1016	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1232	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1242	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1248	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1254	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1260	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1262	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	Aroclor 1268	mg/kg	0.1		-	-	<0.1	-	-	-	-	-	-	-
	PCBs (Sum of total)	mg/kg	0.9	**50**	-	-	<0.9	-	-	-	-	-	-	-
TRH	TPH C6 - C9 Fraction	mg/kg	20	**65**	<20	-	<20	<20	<20	<20	<20	-	<20	<20
	TPH C10 - C14 Fraction	mg/kg	20		150	-	<20	28	<20	<20	<20	-	26	<20
	TPH C15 - C28 Fraction	mg/kg	50		130	-	<50	180	<50	<50	<50	-	260	<50
	TPH C29 - C36 Fraction	mg/kg	50		130	-	<50	120	<50	<50	51	-	84	<50
	TPH+C10 - C36 (Sum of total)	mg/kg		**1000**	410	-	<120	328	<120	<120	86	-	370	<120

Soil Investigation Levels from:
NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme (2nd ed) - Appendix II, Commercial/Industrial Landuse
Bold Calculations exceed adopted NSW DEC (2006) investigation criteria

Table LR3
Laboratory Results-Test Pits
ENVIWARA00401AA

				Field ID	TP1	TP2	TP3	TP4	TP4	TP3
				Sample Depth(m)	0.0-0.1	0.4-0.5	0.0-0.1	0.0-0.1	0.9-1.0	0.4-0.5
				Sample Date	5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009
Analytes		**Units**	**PQL**	**NSW Commercial F**						
BTEX	Benzene	mg/kg	0.5		-	<0.5	<0.5	<0.5	<0.5	-
	Ethylbenzene	mg/kg	0.5		-	<0.5	<0.5	<0.5	<0.5	-
	Toluene	mg/kg	0.5		-	<0.5	<0.5	<0.5	<0.5	-
	Xylene (m & p)	mg/kg	1		-	<1	<1	<1	<1	-
	Xylene (o)	mg/kg	0.5		-	<0.5	<0.5	<0.5	<0.5	-
	Xylene Total	mg/kg	1.5		-	<1.5	<1.5	<1.5	<1.5	-
Metals	Arsenic	mg/kg	3	**500**	13	4	<3	<3	6	-
	Cadmium	mg/kg	0.3	**100**	0.4	0.4	<0.3	0.3	0.5	-
	Chromium (III+VI)	mg/kg	0.3		11	11	2.5	15	26	-
	Copper	mg/kg	0.5	**5000**	31	20	7.9	19	21	-
	Lead	mg/kg	1	**1500**	18	7	5	7	32	-
	Nickel	mg/kg	0.5	**3000**	12	7.9	3.3	9.1	18	-
	Zinc	mg/kg	0.5	**35000**	52	43	19	22	95	-
	Mercury	mg/kg	0.05	**75**	<0.05	<0.05	<0.05	<0.05	0.09	-
OCP	4,4-DDE	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	a-BHC	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Aldrin	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	b-BHC	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	cis-Chlordane	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	d-BHC	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	DDD	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	DDT	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Dieldrin	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Endosulfan I	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Endosulfan II	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Endrin	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Endrin aldehyde	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Endrin ketone	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Heptachlor	mg/kg	0.1	**50**	<0.1	<0.1	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Methoxychlor	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	o,p'-DDD	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	o,p'-DDE	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	o,p'DDT	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	trans-chlordane	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	-	-	-	-
	Aldrin + Dieldrin	mg/kg		**50**	<0.2	<0.2	-	-	-	-
	DDT+DDE+DDD	mg/kg		**1000**	<0.3	<0.3	-	-	-	-
PAHs	1-Methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	2-methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Acenaphthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Acenaphthylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Anthracene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Benz(a)anthracene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Benzo(a) pyrene	mg/kg	0.05	**5**	0.08	0.06	<0.05	<0.05	<0.05	-
	Benzo(b)&(k)fluoranthene	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	-
	Benzo(g,h,i)perylene	mg/kg	0.1		0.11	0.14	<0.1	<0.1	<0.1	-
	Chrysene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Dibenz(a,h)anthracene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Fluoranthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Fluorene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Naphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	PAHs (Sum of total)	mg/kg	1.75	**100**	<1.79	<1.8	<1.75	<1.75	<1.75	-
	Phenanthrene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
	Pyrene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	-
PCBs	Arochlor 1221	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1016	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1232	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1242	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1248	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1254	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1260	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1262	mg/kg	0.1		<0.1	-	-	-	-	-
	Aroclor 1268	mg/kg	0.1		<0.1	-	-	-	-	-
	PCBs (Sum of total)	mg/kg	0.9	**50**	<0.9	-	-	-	-	-
TRH	TPH C6 - C9 Fraction	mg/kg	20	**65**	-	<20	<20	<20	<20	-
	TPH C10 - C14 Fraction	mg/kg	20		-	<20	<20	<20	<20	-
	TPH C15 - C28 Fraction	mg/kg	50		-	<50	<50	<50	<50	-
	TPH C29 - C36 Fraction	mg/kg	50		-	<50	<50	<50	<50	-
	TPH+C10 - C36 (Sum of total)	mg/kg		**1000**	-	<120	<120	<120	<120	-
Dioxin	I-TEQ	ng/kg	2.22	**10**	-	-		-		2.3

Soil Investigation Levels from:
NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme (2nd ed) - Appendix II, Commercial/Industrial Landuse
Bold Calculations exceed adopted NSW DEC (2006) investigation criteria

Table LR4
Laboratory Results- Quality Control
ENVIWARA00401AA

			SDG	SE69125	SE69125		Interlab_D		SE69125	SE69125		SE69125	SE69125	
			Field ID	SB1	QC1	RPD	QC1A	RPD	SS-1	QC6	RPD	TP1	QC8	RPD
					Duplicate		Triplicate			Duplicate			Duplicate	
			Sample Date	05/05/09	05/05/09		05/05/09		06/05/09	06/05/09		06/05/09	06/05/09	
Analytes		**Units**	**PQL**											
BTEX	Benzene	mg/kg	0.5	<0.5	<0.5	0	<0.05	0	<0.5	<0.5	0	-	-	-
	Ethylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.05	0	<0.5	<0.5	0	-	-	-
	Toluene	mg/kg	0.5	<0.5	<0.5	0	<0.05	0	<0.5	<0.5	0	-	-	-
	Xylene (m & p)	mg/kg	1	<1.0	<1.0	0	-	-	<1.0	<1.0	0	-	-	-
	Xylene (o)	mg/kg	0.5	<0.5	<0.5	0	-	-	<0.5	<0.5	0	-	-	-
	Xylene Total	mg/kg	1.5 / 0.5	<1.5	<1.5	0	<0.05	0	<1.5	<1.5	0	-	-	-
Metals	Arsenic	mg/kg	3 / 2	6.0	5.0	18	6.9	14	6.0	6.0	0	13.0	11.0	17
	Cadmium	mg/kg	0.3 / 0.5	0.4	0.3	29	<0.5	0	0.5	0.6	18	0.4	0.4	0
	Chromium (III+VI)	mg/kg	0.3 / 0.5	20.0	18.0	11	24.0	18	20.0	23.0	14	11.0	12.0	9
	Copper	mg/kg	0.5 / 5	20.0	18.0	11	20.0	0	24.0	23.0	4	31.0	25.0	21
	Lead	mg/kg	1 / 5	20.0	15.0	29	12.0	50	22.0	19.0	15	18.0	20.0	11
	Nickel	mg/kg	0.5 / 5	19.0	17.0	11	21.0	10	13.0	13.0	0	12.0	12.0	0
	Zinc	mg/kg	0.5 / 5	58.0	51.0	13	56.0	4	**370.0**	**220.0**	**51**	52.0	46.0	12
	Mercury	mg/kg	0.05 / 0.1	<0.05	<0.05	0	<0.1	0	<0.05	0.05	0	<0.05	<0.05	0
OCP	4,4-DDE	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	a-BHC	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Aldrin	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	b-BHC	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	cis-Chlordane	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
	d-BHC	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	DDD	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	DDT	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Dieldrin	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Endosulfan I	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Endosulfan II	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Endosulfan sulphate	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Endrin	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Endrin aldehyde	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Endrin ketone	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	g-BHC (Lindane)	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Heptachlor	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Heptachlor epoxide	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Hexachlorobenzene	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	Methoxychlor	mg/kg	0.1 / 0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
	o,p'-DDD	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
	o,p'-DDE	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
	o,p'DDT	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
	trans-chlordane	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
	trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
PAHs	1-Methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
	2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0	-	-	<0.1	<0.1	0	<0.1	<0.1	0
	Acenaphthene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Acenaphthylene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Anthracene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Benz(a)anthracene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	0.15	40
	Benzo(a) pyrene	mg/kg	0.05 / 0.1	<0.05	<0.05	0	<0.1	0	<0.05	<0.05	0	0.08	0.11	32
	Benzo(b)&(k)fluoranthene	mg/kg	0.2	<0.2	<0.2	0	-	-	<0.2	<0.2	0	<0.2	0.33	49
	Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	0.11	0.22	**67**
	Chrysene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	0.13	26
	Dibenz(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Fluoranthene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	0.14	33
	Fluorene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	0.16	46
	Naphthalene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	PAHs (Sum of total)	mg/kg	1.75 / 0.1	<1.75	<1.75	0	<0.1	0	<1.75	<1.75	0	<1.79	<2.29	0
	Phenanthrene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Pyrene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	<0.1	<0.1	0	<0.1	0.15	40
PCBs	Arochlor 1221	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	-	-	-	<0.1	<0.1	0
	Aroclor 1016	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	-	-	-	<0.1	<0.1	0
	Aroclor 1232	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	-	-	-	<0.1	<0.1	0
	Aroclor 1242	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	-	-	-	<0.1	<0.1	0
	Aroclor 1248	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	-	-	-	<0.1	<0.1	0
	Aroclor 1254	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	-	-	-	<0.1	<0.1	0
	Aroclor 1260	mg/kg	0.1	<0.1	<0.1	0	<0.1	0	-	-	-	<0.1	<0.1	0
	Aroclor 1262	mg/kg	0.1	<0.1	<0.1	0	-	-	-	-	-	<0.1	<0.1	0
	Aroclor 1268	mg/kg	0.1	<0.1	<0.1	0	-	-	-	-	-	<0.1	<0.1	0
	PCBs (Sum of total)	mg/kg	0.9 / 1	<0.9	<0.9	0	<1.0	0	-	-	-	<0.9	<0.9	0
TRH	TPH C6 - C9 Fraction	mg/kg	20	<20.0	<20.0	0	<20.0	0	<20.0	<20.0	0	-	-	-
	TPH C10 - C14 Fraction	mg/kg	20 / 50	<20.0	<20.0	0	<50.0	0	150.0	180.0	18	-	-	-
	TPH C15 - C28 Fraction	mg/kg	50 / 100	<50.0	<50.0	0	<100.0	0	**130.0**	**300.0**	**79**	-	-	-
	TPH C29 - C36 Fraction	mg/kg	50 / 100	<50.0	<50.0	0	<100.0	0	130.0	200.0	42	-	-	-

*RPDs have only been considered where a concentration is greater than 5 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 30 (5-10 x EQL); 50 (10-30 x EQL); 50 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Table LR4
Laboratory Results- Quality Control
ENVIWARA00401AA

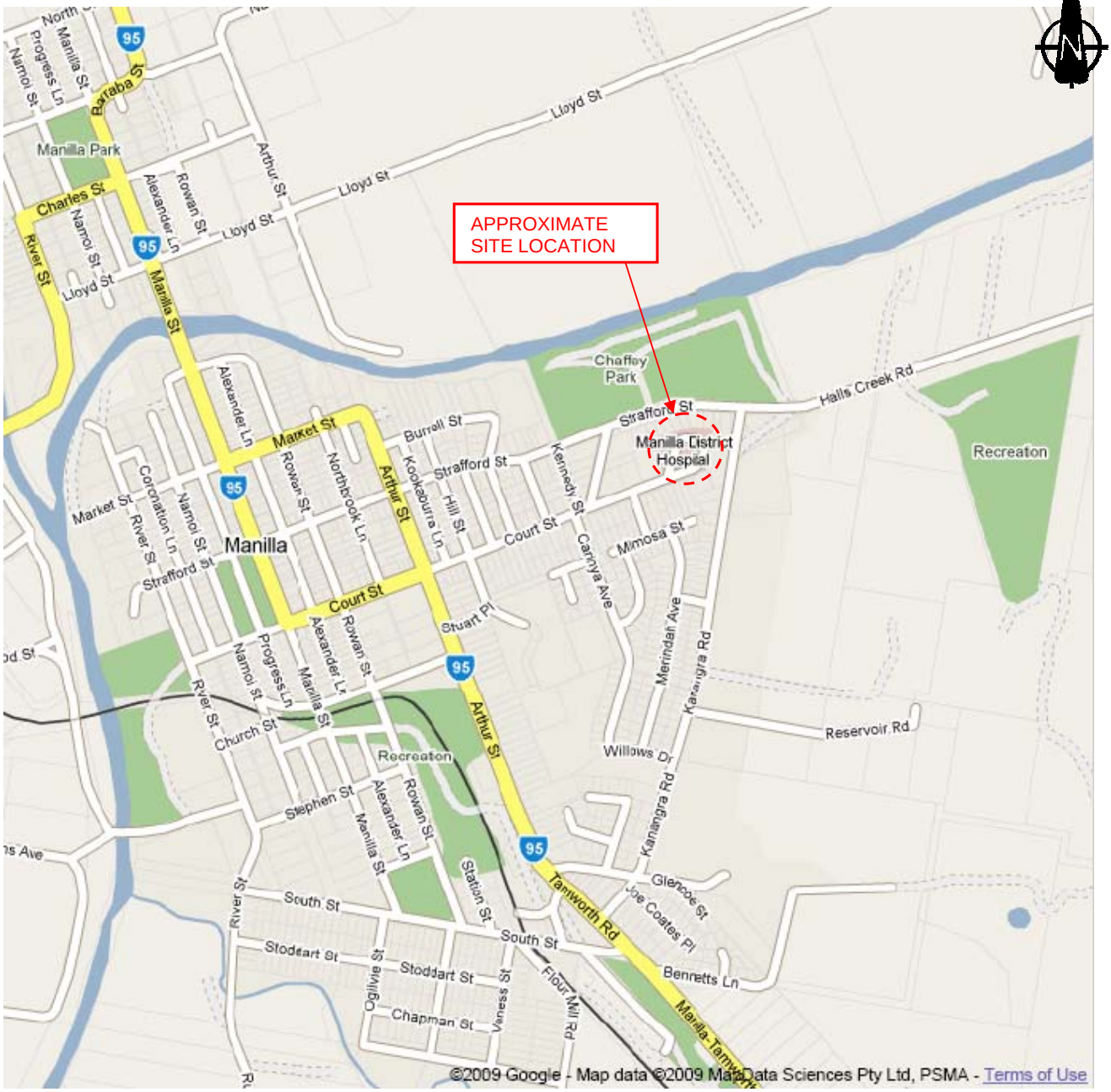
			SDG	TB #1	WTS #1	SE69125	SE69125
			Field ID			QCA	QCB
				Trip Blank	Trip Blank	rinsate	rinsate
			Sample Date			05/05/09	05/05/09
Analytes		**Units**	**PQL**				
BTEX	Benzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
	Ethylbenze	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
	Toluene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
	Xylene (m &	mg/kg	1	<1	<1	<1	<1
	Xylene (o)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
	Xylene Tota	mg/kg	1.5 / 0.5	<1.5	<1.5	<1.5	<1.5
Metals	Arsenic	mg/kg	3 / 2	-	-	<0.001	<0.001
	Cadmium	mg/kg	0.3 / 0.5	-	-	<0.0001	<0.0001
	Chromium	mg/kg	0.3 / 0.5	-	-	<0.001	<0.001
	Copper	mg/kg	0.5 / 5	-	-	<0.001	<0.001
	Lead	mg/kg	1 / 5	-	-	<0.001	<0.001
	Nickel	mg/kg	0.5 / 5	-	-	<0.001	<0.001
	Zinc	mg/kg	0.5 / 5	-	-	**0.073**	**0.12**
	Mercury	mg/kg	0.05 / 0.1	-	-	<0.0005	<0.0005
OCP	4,4-DDE	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	a-BHC	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Aldrin	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	b-BHC	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	cis-Chlorda	mg/kg	0.1	-	-	<0.2	<0.2
	d-BHC	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	DDD	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	DDT	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Dieldrin	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Endosulfan	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Endosulfan	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Endosulfan	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Endrin	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Endrin alde	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Endrin keto	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	g-BHC (Lind	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Heptachlor	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Heptachlor	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Hexachlorol	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	Methoxych	mg/kg	0.1 / 0.05	-	-	<0.2	<0.2
	o,p'-DDD	mg/kg	0.1	-	-	<0.0002	<0.0002
	o,p'-DDE	mg/kg	0.1	-	-	<0.0002	<0.0002
	o,p'DDT	mg/kg	0.1	-	-	<0.0002	<0.0002
	trans-chlor	mg/kg	0.1	-	-	<0.2	<0.2
	trans-Nona	mg/kg	0.1	-	-	<0.0002	<0.0002
PAHs	1-Methylna	mg/kg	0.1	-	-	<0.5	<0.5
	2-methylna	mg/kg	0.1	-	-	<0.5	<0.5
	Acenaphth	mg/kg	0.1	-	-	<0.5	<0.5
	Acenaphth	mg/kg	0.1	-	-	<0.5	<0.5
	Anthracene	mg/kg	0.1	-	-	<0.5	<0.5
	Benz(a)ant	mg/kg	0.1	-	-	<0.5	<0.5
	Benzo(a) py	mg/kg	0.05 / 0.1	-	-	<0.5	<0.5
	Benzo(b)&(	mg/kg	0.2	-	-	<1	<1
	Benzo(g,h,i	mg/kg	0.1	-	-	<0.5	<0.5
	Chrysene	mg/kg	0.1	-	-	<0.5	<0.5
	Dibenz(a,h)	mg/kg	0.1	-	-	<0.5	<0.5
	Fluoranthe	mg/kg	0.1	-	-	<0.5	<0.5
	Fluorene	mg/kg	0.1	-	-	<0.5	<0.5
	Indeno(1,2	mg/kg	0.1	-	-	<0.5	<0.5
	Naphthaler	mg/kg	0.1	-	-	<0.5	<0.5
	PAHs (Sum	mg/kg	1.75 / 0.1	-	-	<9	<9
	Phenanthre	mg/kg	0.1	-	-	<0.5	<0.5
	Pyrene	mg/kg	0.1	-	-	<0.5	<0.5
PCBs	Arochlor 12	mg/kg	0.1	-	-	<10	<10
	Aroclor 101	mg/kg	0.1	-	-	<10	<10
	Aroclor 123	mg/kg	0.1	-	-	<10	<10
	Aroclor 124	mg/kg	0.1	-	-	<10	<10
	Aroclor 124	mg/kg	0.1	-	-	<10	<10
	Aroclor 125	mg/kg	0.1	-	-	<10	<10
	Aroclor 126	mg/kg	0.1	-	-	<10	<10
	Aroclor 126	mg/kg	0.1	-	-	<10	<10
	Aroclor 126	mg/kg	0.1	-	-	<0.01	<0.01
	PCBs (Sum	mg/kg	0.9 / 1	-	-	<90	<90
TRH	TPH C6 - C9	mg/kg	20	<40	-	<40	<40
	TPH C10 - C	mg/kg	20 / 50	-	-	<100	<100
	TPH C15 - C	mg/kg	50 / 100	-	-	<200	<200
	TPH C29 - C	mg/kg	50 / 100	-	-	<200	<200

*RPDs have only been considered where a concentration is greater than 5 times the EQL.

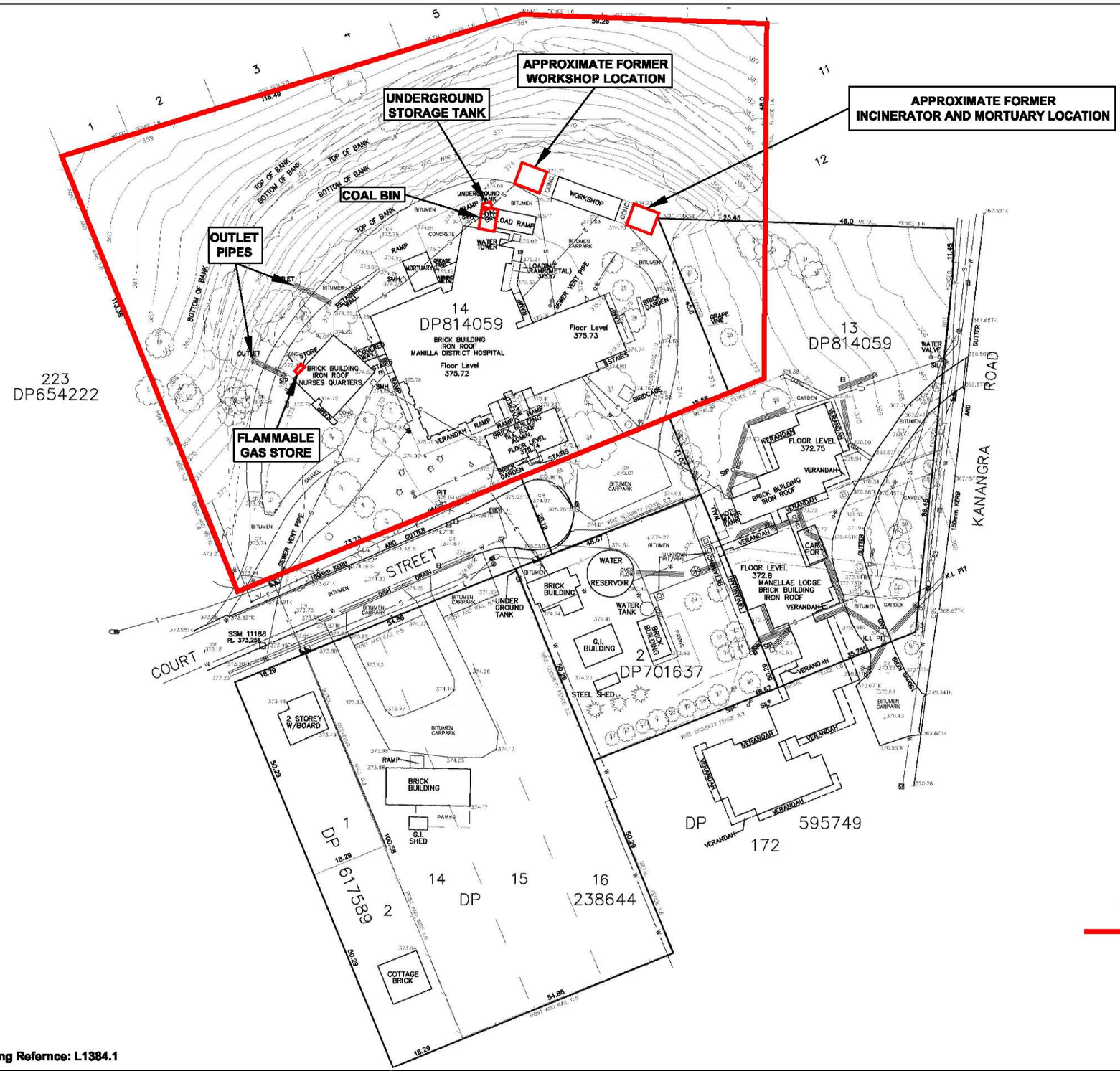
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 30 (5-10 x EQL); 50 (10-30 x EQL); 50 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Figures



drawn	**ELC**	coffey environments SPECIALISTS IN LIVING AND WORKING PLACES	client:	**DEPARTMENT OF COMMERCE**
approved			project:	**MANILLA COMBINED MPS / HEALTH ONE STAGE 2 ENVIRONMENTAL SITE ASSESSMENT COURT STREET, MANILLA HOSPITAL**
date	**16-6-2009**		title:	**SITE LOCALITY PLAN**
scale	**NTS**		project no: **ENVIWARA00401AA**	figure no: **FIGURE 1**
original size	**A4**			



LEGEND

SITE BOUNDARY

Drawing based on plan prepared by Brown & Krippner. Drawing Refernce: L1384.1

revision	description	drawn	approved	date

8 0 8 16 32

Scale (metres)

drawn	NLS
approved	ELC
date	12-05-09
scale	1:800
original size	A3

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SPECIALISTS IN LIVING AND WORKING PLACES

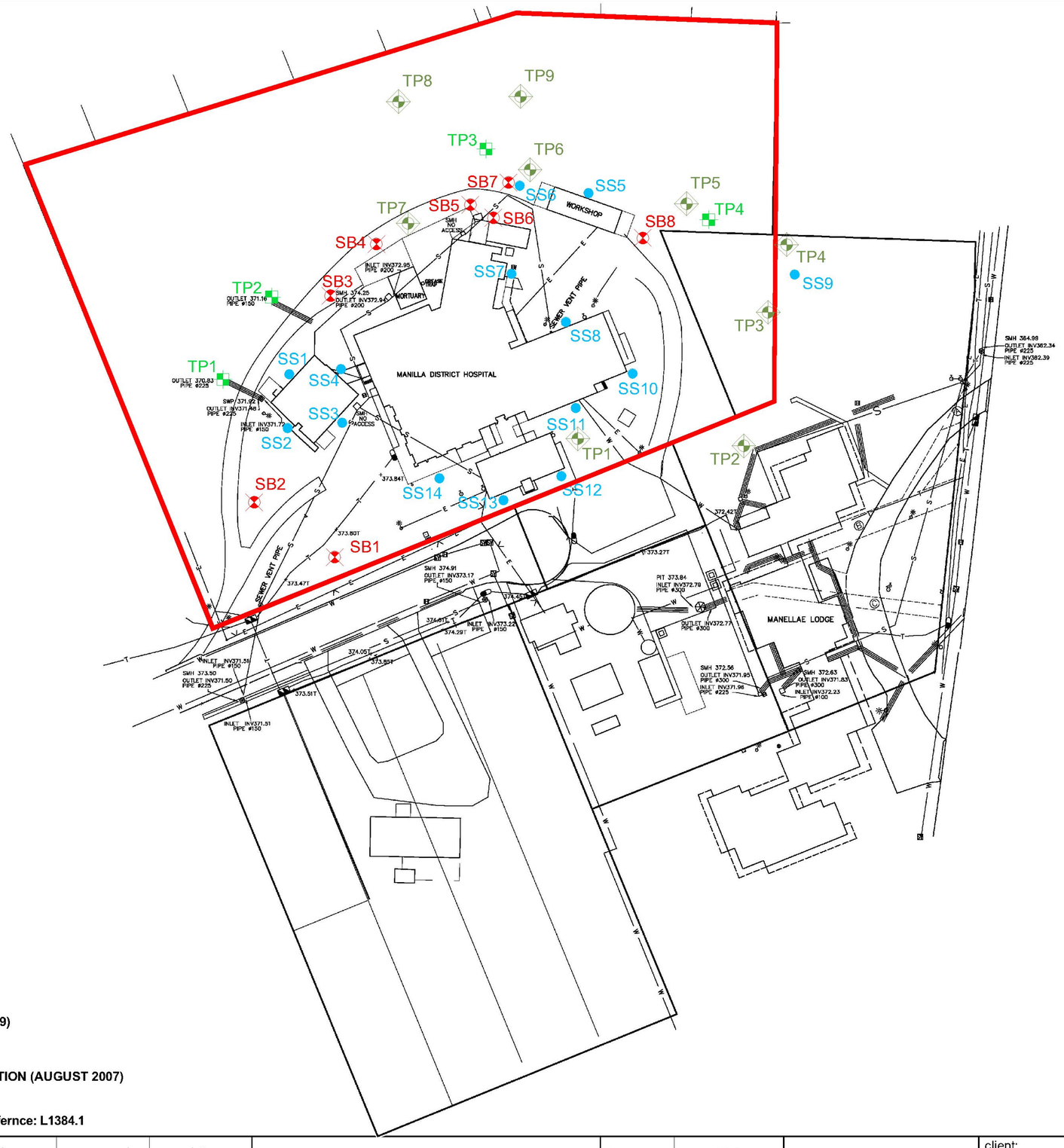
client: DEPARTMENT OF COMMERCE

project: MANILLA COMBINED MPS / HEALTH ONE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
COURT STREET, MANILLA HOSPITAL

title: SITE FEATURES PLAN

project no: ENVIWARA00401AA

figure no: FIGURE 2



N

LEGEND

- APPROXIMATE TEST PIT LOCATION (MAY 2009)
- APPROXIMATE SURFACE SAMPLE LOCATION (MAY 2009)
- APPROXIMATE BOREHOLE LOCATION (MAY 2009)
- APPROXIMATE HUNTER GEOTECHNICS TESTPIT LOCATION (AUGUST 2007)
- SITE BOUNDARY

Drawing based on plan prepared by Brown & Krippner. Drawing Refernce: L1384.1

revision	description	drawn	approved	date

8 0 8 16 32

Scale (metres)

drawn	NLS
approved	ELC
date	12-05-09
scale	1:800
original size	A3

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SPECIALISTS IN LIVING AND WORKING PLACES

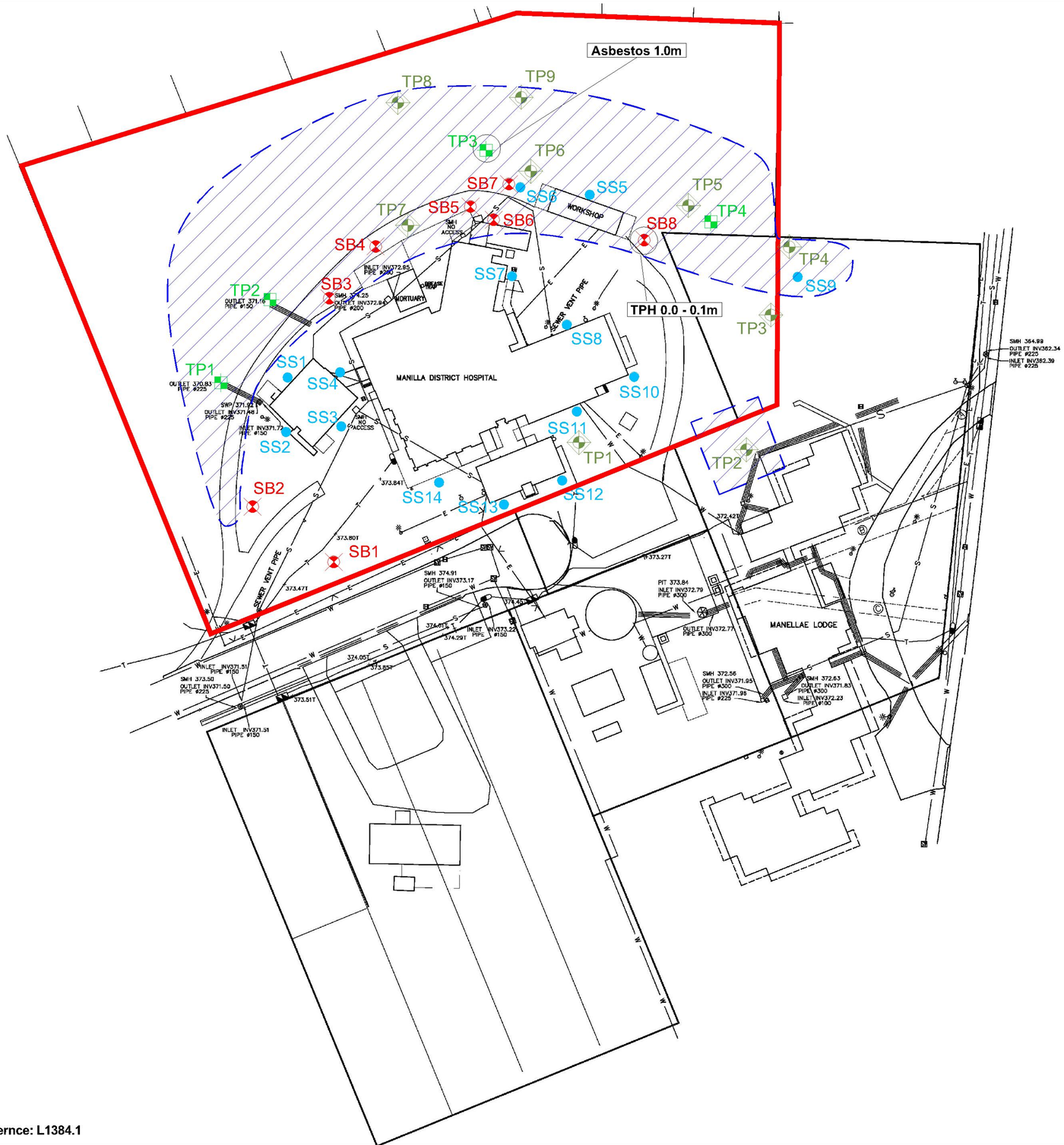
client: **DEPARTMENT OF COMMERCE**

project: **MANILLA COMBINED MPS / HEALTH ONE**
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
COURT STREET, MANILLA HOSPITAL

title: **APPROXIMATE SAMPLE LOCATION PLAN**

project no: **ENVIWARA00401AA**

figure no: **FIGURE 3**



N

LEGEND

- APPROXIMATE TEST PIT LOCATION
- APPROXIMATE SURFACE SAMPLE LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE HGS TESTPIT LOCATION
- SITE BOUNDARY
- APPROXIMATE EXTENT OF FILL ENCOUNTERED

TPH 0.0 - 0.1m IDENTIFIED CONTAMINATION AND DEPTH

Drawing based on plan prepared by Brown & Krippner. Drawing Refernce: L1384.1

revision	description	drawn	approved	date

8 0 8 16 32

Scale (metres)

drawn	NLS
approved	ELC
date	12-05-09
scale	1:800
original size	A3

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SPECIALISTS IN LIVING AND WORKING PLACES

client: DEPARTMENT OF COMMERCE

project: MANILLA COMBINED MPS / HEALTH ONE
STAGE 2 ENVIRONMENTAL SITE ASSESSMENT
COURT STREET, MANILLA HOSPITAL

title: INDENTIFIED CONTAMINATION AND APPROXIMATE EXTENT OF FILL

project no: ENVIWARA00401AA

figure no: FIGURE 4

Appendix A
Logs

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Soil Description Explanation Sheet (1 of 2)

DEFINITION:

In engineering terms soil includes every type of uncemented or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL & SOIL NAME

Soils are described in accordance with the Unified Soil Classification (UCS) as shown in the table on Sheet 2.

PARTICLE SIZE DESCRIPTIVE TERMS

NAME	SUBDIVISION	SIZE
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 μm to 2.36 mm
	medium	200 μm to 600 μm
	fine	75 μm to 200 μm

MOISTURE CONDITION

Dry Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through hands.

Moist Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.

Wet As for moist but with free water forming on hands when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNDRAINED STRENGTH s_u (kPa)	FIELD GUIDE
Very Soft	<12	A finger can be pushed well into the soil with little effort.
Soft	12 - 25	A finger can be pushed into the soil to about 25mm depth.
Firm	25 - 50	The soil can be indented about 5mm with the thumb, but not penetrated.
Stiff	50 - 100	The surface of the soil can be indented with the thumb, but not penetrated.
Very Stiff	100 - 200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the thumbnail.
Friable	–	Crumbles or powders when scraped by thumbnail.

DENSITY OF GRANULAR SOILS

TERM	DENSITY INDEX (%)
Very loose	Less than 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	Greater than 85

MINOR COMPONENTS

TERM	ASSESSMENT GUIDE	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary component.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye, soil properties little different to general properties of primary component.	Coarse grained soils: 5 - 12% Fine grained soils: 15 - 30%

SOIL STRUCTURE

ZONING		CEMENTING	
Layers	Continuous across exposure or sample.	Weakly cemented	Easily broken up by hand in air or water.
Lenses	Discontinuous layers of lenticular shape.	Moderately cemented	Effort is required to break up the soil by hand in air or water.
Pockets	Irregular inclusions of different material.		

GEOLOGICAL ORIGIN

WEATHERED IN PLACE SOILS

Extremely weathered material — Structure and fabric of parent rock visible.

Residual soil — Structure and fabric of parent rock not visible.

TRANSPORTED SOILS

Aeolian soil — Deposited by wind.

Alluvial soil — Deposited by streams and rivers.

Colluvial soil — Deposited on slopes (transported downslope by gravity).

Fill — Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.

Lacustrine soil — Deposited by lakes.

Marine soil — Deposited in ocean basins, bays, beaches and estuaries.

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Soil Description Explanation Sheet (2 of 2)

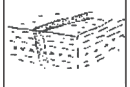
SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60 mm and basing fractions on estimated mass)							USC	PRIMARY NAME
COARSE GRAIINED SOILS More than 50% of materials less than 63 mm is larger than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	GRAVELS More than half of coarse fraction is larger than 2.0 mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.			GW	GRAVEL
				Predominantly one size or a range of sizes with more intermediate sizes missing.			GP	GRAVEL
			GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)			GM	SILTY GRAVEL
				Plastic fines (for identification procedures see CL below)			GC	CLAYEY GRAVEL
		SANDS More than half of coarse fraction is smaller than 2.0 mm	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate sizes			SW	SAND
				Predominantly one size or a range of sizes with some intermediate sizes missing.			SP	SAND
			SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).			SM	SILTY SAND
				Plastic fines (for identification procedures see CL below).			SC	CLAYEY SAND
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm			IDENTIFICATION PROCEDURES ON FRACTIONS <0.2 mm.					
		SILTS & CLAYS Liquid limit less than 50	**DRY STRENGTH**	**DILATANCY**	**TOUGHNESS**			
			None to Low	Quick to slow	None		ML	SILT
			Medium to High	None	Medium		CL	CLAY
			Low to medium	Slow to very slow	Low		OL	ORGANIC SILT
		SILTS & CLAYS Liquid limit greater than 50	Low to medium	Slow to very slow	Low to medium		MH	SILT
			High	None	High		CH	CLAY
			Medium to High	None	Low to medium		OH	ORGANIC CLAY
HIGHLY ORGANIC SOILS			Readily identified by colour, odour, spongy feel and frequently by fibrous texture.				Pt	PEAT

• Low plasticity – Liquid Limit W_L less than 35%. • Medium plasticity – W_L between 35% and 50%.

COMMON DEFECTS IN SOIL

TERM	DEFINITION	DIAGRAM
PARTING	A surface or crack across which the soil has little or no tensile strength. Parallel or sub parallel to layering (eg bedding). May be open or closed.	
JOINT	A surface or crack across which the soil has little or no tensile strength but which is not parallel or sub parallel to layering. May be open or closed. The term 'fissure' may be used for irregular joints <0.2 m in length.	
SHEARED ZONE	Zone in clayey soil with roughly parallel near planar, curved or undulating boundaries containing closely spaced, smooth or slickensided, curved intersecting joints which divide the mass into lenticular or wedge shaped blocks.	
SHEARED SURFACE	A near planar curved or undulating, smooth, polished or slickensided surface in clayey soil. The polished or slickensided surface indicates that movement (in many cases very little) has occurred along the defect.	

TERM	DEFINITION	DIAGRAM
SOFTENED ZONE	A zone in clayey soil, usually adjacent to a defect in which the soil has a higher moisture content than elsewhere.	
TUBE	Tubular cavity. May occur singly or as one of a large number of separate or inter-connected tubes. Walls often coated with clay or strengthened by denser packing of grains. May contain organic matter	
TUBE CAST	Roughly cylindrical elongated body of soil different from the soil mass in which it occurs. In some cases the soil which makes up the tube cast is cemented.	
INFILLED SEAM	Sheet or wall like body of soil substance or mass with roughly planar to irregular near parallel boundaries which cuts through a soil mass. Formed by infilling of open joints.	

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Rock Description Explanation Sheet (1 of 2)

The descriptive terms used by Coffey are given below. They are broadly consistent with Australian Standard AS1726-1993.

DEFINITIONS: Rock substance, defect and mass are defined as follows:

Rock Substance	In engineering terms roch substance is any naturally occurring aggregate of minerals and organic material which cannot be disintegrated or remoulded by hand in air or water. Other material is described using soil descriptive terms. Effectively homogenous material, may be isotropic or anisotropic.
Defect	Discontinuity or break in the continuity of a substance or substances.
Mass	Any body of material which is not effectively homogeneous. It can consist of two or more substances without defects, or one or more substances with one or more defects.

SUBSTANCE DESCRIPTIVE TERMS:

ROCK NAME	Simple rock names are used rather than precise geological classification.
PARTICLE SIZE	Grain size terms for sandstone are:
Coarse grained	Mainly 0.6mm to 2mm
Medium grained	Mainly 0.2mm to 0.6mm
Fine grained	Mainly 0.06mm (just visible) to 0.2mm
FABRIC	Terms for layering of penetrative fabric (eg. bedding, cleavage etc.) are:
Massive	No layering or penetrative fabric.
Indistinct	Layering or fabric just visible. Little effect on properties.
Distinct	Layering or fabric is easily visible. Rock breaks more easily parallel to layering of fabric.

CLASSIFICATION OF WEATHERING PRODUCTS

Term	Abbreviation	Definition
Residual Soil	**RS**	Soil derived from the weathering of rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
Extremely Weathered Material	**XW**	Material is weathered to such an extent that it has soil properties, ie, it either disintegrates or can be remoulded in water. Original rock fabric still visible.
Highly Weathered Rock	**HW**	Rock strength is changed by weathering. The whole of the rock substance is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Some minerals are decomposed to clay minerals. Porosity may be increased by leaching or may be decreased due to the deposition of minerals in pores.
Moderately Weathered Rock	**MW**	The whole of the rock substance is discoloured, usually by iron staining or bleaching , to the extent that the colour of the fresh rock is no longer recognisable.
Slightly Weathered Rock	**SW**	Rock substance affected by weathering to the extent that partial staining or partial discolouration of the rock substance (usually by limonite) has taken place. The colour and texture of the fresh rock is recognisable; strength properties are essentially those of the fresh rock substance.
Fresh Rock	**FR**	Rock substance unaffected by weathering.

Notes on Weathering:

1. AS1726 suggests the term "Distinctly Weathered" (DW) to cover the range of substance weathering conditions between XW and SW. For projects where it is not practical to delineate between HW and MW or it is judged that there is no advantage in making such a distinction. DW may be used with the definition given in AS1726.
2. Where physical and chemical changes were caused by hot gasses and liquids associated with igneous rocks, the term "altered" may be substituted for "weathering" to give the abbreviations XA, HA, MA, SA and DA.

ROCK SUBSTANCE STRENGTH TERMS

Term	Abbrev-iation	Point Load Index, I_S50 (MPa)	Field Guide
Very Low	**VL**	Less than 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; pieces up to 30mm thick can be broken by finger pressure.
Low	**L**	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show with firm bows of a pick point; has a dull sound under hammer. Pieces of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	**M**	0.3 to 1.0	Readily scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High	**H**	1 to 3	A piece of core 150mm long by 50mm can not be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	**VH**	3 to 10	Hand specimen breaks after more than one blow of a pick; rock rings under hammer.
Extremely High	**EH**	More than 10	Specimen requires many blows with geological pick to break; rock rings under hammer.

Notes on Rock Substance Strength:

1. In anisotropic rocks the field guide to strength applies to the strength perpendicular to the anisotropy. High strength anisotropic rocks may break readily parallel to the planar anisotropy.
2. The term "extremely low" is not used as a rock substance strength term. While the term is used in AS1726-1993, the field guide therein makes it clear that materials in that strength range are soils in engineering terms.
3. The unconfined compressive strength for isotropic rocks (and anisotropic rocks which fall across the planar anisotropy) is typically 10 to 25 times the point load index (Is50). The ratio may vary for different rock types. Lower strength rocks often have lower ratios than higher strength rocks.

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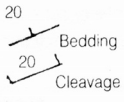
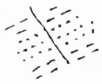
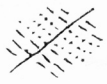
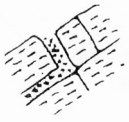
Rock Description Explanation Sheet (2 of 2)

COMMON DEFECTS IN ROCK MASSES

Term	Definition	Diagram	Map Symbol	Graphic Log (Note 1)
Parting	A surface or crack across which the rock has little or no tensile strength. Parallel or sub parallel to layering (eg bedding) or a planar anisotropy in the rock substance (eg, cleavage). May be open or closed.			
Joint	A surface or crack across which the rock has little or no tensile strength. but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.			
Sheared Zone (Note 3)	Zone of rock substance with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge shaped blocks.			
Sheared Surface (Note 3)	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.			
Crushed Seam (Note 3)	Seam with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock substance which may be more weathered than the host rock. The seam has soil properties.			
Infilled Seam	Seam of soil substance usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1mm thick may be described as veneer or coating on joint surface.			
Extremely Weathered Seam	Seam of soil substance, often with gradational boundaries. Formad by weathering of the rock substance in place.			

Notes on Defects:

1. Usually borehole logs show the true dip of defects and face sketches and sections the apparent dip.
2. Partings and joints are not usually shown on the graphic log unless considered significant.
3. Sheared zones, sheared surfaces and crushed seams are faults in geological terms.

DEFECT SHAPE TERMS

Planar	The defect does not vary in orientation
Curved	The defect has a gradual change in orientation
Undulating	The defect has a wavy surface
Stepped	The defect has one or more well defined steps
Irregular	The defect has many sharp changes of orientation

Note: The assessment of defect shape is partly influenced by the scale of the observation.

ROUGHNESS TERMS

Slickensided	Grooved or striated surface, usually polished
Polished	Shiny smooth surface
Smooth	Smooth to touch. Few or no surface irregularities
Rough	Many small surface irregularities (amplitude generally less than 1mm). Feels like fine to coarse sand paper.
Very Rough	Many large surface irregularities (amplitude generally more than 1mm). Feels like, or coarser than very coarse sand paper.

COATING TERMS

Clean	No visible coating
Stained	No visible coating but surfaces are discoloured
Veneer	A visible coating of soil or mineral, too thin to measure; may be patchy
Coating	A visible coating up to 1mm thick. Thicker soil material is usually described using appropriate defect terms (eg, infilled seam). Thicker rock strength material is usually described as a vein.

BLOCK SHAPE TERMS

Blocky	Approximately equidimensional
Tabular	Thickness much less than length or width
Columnar	Height much greate than cross section

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Engineering Log - Borehole

Borehole No.	**SB 1**
Sheet	1 of 1
Office Job No.:	**ENVIWARA00401AA**
Client:	**DEPARTMENT OF COMMERCE**
Date started:	**5.5.2009**
Principal:	
Date completed:	**5.5.2009**
Project:	**PHASE 2 ENVIRONMENTAL SITE ASSESSMENT**
Logged by:	**DCH**
Borehole Location:	**MANILLA HOSPITAL**
Checked by:	

drill model and mounting:	4WD Drill Rig	Easting:	slope: -90°	R.L. Surface:	Not Measured
hole diameter:	125 mm	Northing	bearing:	datum:	

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed	E					**TOPSOIL:** Gravelly SAND, fine to medium grained, brown, gravel fine grained.	D			TOPSOIL, some rootlets.
				E		0.5		CH	**Gravelly CLAY:** medium to high plasticity, brown / orange, gravel fine to medium grained.	M<Wp			RESIDUAL No odours observed.
				E		1.0		CH	**Gravelly CLAY:** high plasticity, pale grey, gravel fine to medium grianed.				EXTREMELY WEATHERED CLAYSTONE Drilling very hard 1.2m.
				E		1.5			Terminated at refusal on bedrock. Borehole SB 1 terminated at 1.5m				
						2.0							
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Borehole

Borehole No.	SB 2
Sheet	1 of 1
Office Job No.:	ENVIWARA00401AA
Date started:	5.5.2009
Date completed:	5.5.2009
Logged by:	DCH
Checked by:	

Client: DEPARTMENT OF COMMERCE

Principal:

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

Borehole Location: MANILLA HOSPITAL

drill model and mounting:	4WD Drill Rig	Easting:	slope: -90°	R.L. Surface:	Not Measured
hole diameter:	125 mm	Northing	bearing:	datum:	

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed	E					**TOPSOIL:** Gravelly SAND, fine to medium grained, brown, gravel fine to medium grained.	D			TOPSOIL Some rootlets.
				E		0.5		CH	**Sandy CLAY:** medium to high plasticity, brown / orange, sand fine to medium grained.	M<Wp			RESIDUAL No odours observed.
				E		1.0		CH	**Gravelly CLAY:** pale to dark brown, medium to high plasticity, gravel fine to medium grained.				EXTREMELY WEATHERED CLAYSTONE
				E		1.5			Terminated due to refusal on bedrock. Borehole SB 2 terminated at 1.4m				
						2.0							
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Borehole

Borehole No.	SB 3
Sheet	1 of 1
Office Job No.:	ENVIWARA00401AA
Client:	DEPARTMENT OF COMMERCE
Date started:	5.5.2009
Principal:	
Date completed:	5.5.2009
Project:	PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
Logged by:	DCH
Borehole Location:	MANILLA HOSPITAL
Checked by:	MA

drill model and mounting:	4WD Drill Rig	Easting:	slope: -90°	R.L. Surface:	Not Measured
hole diameter:	125 mm	Northing	bearing:	datum:	

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed	E					**BITUMEN:**				BITUMEN ROAD
									FILL: Gravelly SAND, fine to medium grained, brown, gravel fine grained.	D			FILL
				E		0.5		CH	**Gravelly CLAY:** medium to high plasticity, brown, gravel fine to medium grained.	M<Wp			RESIDUAL No odours observed.
				E		1.0		CH	**Gravelly CLAY:** high plasticity, pale brown / orange, gravel fine to medium grained.				EXTREMELY WEATHERED CLAYSTONE
									Terminated due to refusal on bedrock. Borehole SB 3 terminated at 1m				
						1.5							
						2.0							
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description
based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Borehole

Borehole No. **SB 4**

Sheet 1 of 1

Office Job No.: **ENVIWARA00401AA**

Client: **DEPARTMENT OF COMMERCE**

Date started: **5.5.2009**

Principal:

Date completed: **5.5.2009**

Project: **PHASE 2 ENVIRONMENTAL SITE ASSESSMENT**

Logged by: **DCH**

Borehole Location: **MANILLA HOSPITAL**

Checked by: AH

drill model and mounting: 4WD Drill Rig | Easting: | slope: -90° | R.L. Surface: Not Measured

hole diameter: 125 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed	E					**BITUMEN:**				BITUMEN ROAD
				E					**FILL:** Gravelly SAND, fine to medium grained, brown, gravel fine to medium grained.				FILL
				E		0.5		CH	**Gravelly CLAY:** medium to high plasticity, dark brown / orange, gravel fine to medium grained.				RESIDUAL No odours observed.
				E		1.0		CH	**Gravelly CLAY:** high plasticity, pale to dark brown, gravel fine to medium grained.				EXTREMELY WEATHERED CLAYSTONE
				E		1.5							Very hard drilling at 1.6m.
						2.0			Terminated due to refusal on bedrock. Borehole SB 4 terminated at 2m				
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE 00401AA.GPJ COFFEY.GDT 5.19.09

Form GEO 5.3 Issue 3 Rev.2

coffey environments

Engineering Log - Borehole

Borehole No.	**SB 5**
Sheet	1 of 1
Office Job No.:	**ENVIWARA00401AA**
Client:	**DEPARTMENT OF COMMERCE**
Date started:	**5.5.2009**
Principal:	
Date completed:	**5.5.2009**
Project:	**PHASE 2 ENVIRONMENTAL SITE ASSESSMENT**
Logged by:	**DCH**
Borehole Location:	**MANILLA HOSPITAL**
Checked by:	

drill model and mounting: 4WD Drill Rig | Easting: | slope: -90° | R.L. Surface: Not Measured

hole diameter: 125 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed						**BITUMEN:**				BITUMEN ROAD
				E					**FILL:** Gravelly SAND, fine to medium grained, pale to dark brown / dark grey, gravel fine grained.	D			FILL No odours observed.
				E		0.5							
				E		1.0			Gravels becoming coarser at 1.1m.				
						1.5							
				E		2.0		CH	**Gravelly CLAY:** medium to high plasticity, orange / dark brown, gravel fine to medium grained.	M<Wp			EXTREMELY WEATHERED CLAYSTONE
				E		2.5		CH	**Gravelly CLAY:** high plasticity, pale to dark brown, gravel fine to medium grained.				
						3.0			Terminated due to refusal on bedrock. Borehole SB 5 terminated at 3m				
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Borehole

Borehole No.	SB 6
Sheet	1 of 1
Office Job No.:	ENVIWARA00401AA
Client:	DEPARTMENT OF COMMERCE
Date started:	5.5.2009
Principal:	
Date completed:	5.5.2009
Project:	PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
Logged by:	DCH
Borehole Location:	MANILLA HOSPITAL
Checked by:	AH

drill model and mounting:	4WD Drill Rig	Easting:	slope: -90°	R.L. Surface:	Not Measured
hole diameter:	125 mm	Northing	bearing:	datum:	

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed						BITUMEN:				BITUMEN
				E					FILL: Gravelly SAND, fine to medium grained, dark brown / grey, gravel fine grained.	D			FILL No odours observed.
				E		0.5							
				E		1.0			Gravels becoming coarser at 1.1m.				
				E		2.0							
						2.5		CH	Gravelly CLAY: medium to high plasticity, dark brown, gravel fine to medium grained.	M<Wp			EXTREMELY WEATHERED CLAYSTONE
				E		3.0		CH	Gravelly CLAY: high plasticity, pale to dark brown, gravel fine to medium grained.				
						3.5			Terminated due to refusal on bedrock. Borehole SB 6 terminated at 3m				
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Borehole

Borehole No.	SB 7
Sheet	1 of 1
Office Job No.:	ENVIWARA00401AA
Date started:	5.5.2009
Date completed:	5.5.2009
Logged by:	DCH
Checked by:	

Client: DEPARTMENT OF COMMERCE

Principal:

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

Borehole Location: MANILLA HOSPITAL

drill model and mounting:	4WD Drill Rig	Easting:	slope: -90°	R.L. Surface:	Not Measured
hole diameter:	125 mm	Northing	bearing:	datum:	

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed	E					**FILL:** Gravelly SAND, fine to medium grained, pale brown, gravel fine grained.	D			FILL No odours observed.
				E		0.5			Gravels becoming coarser at 0.5m.				
				E		1.0			Some fine grained grey ash observed at 0.9m.				
						1.5			Gravel size increasing and becoming coarser with depth.				
				E		2.0							
									Terminated due to refusal in fill. Borehole SB 7 terminated at 2m				
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description
based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Borehole

Borehole No.	SB 8
Sheet	1 of 1
Office Job No.:	ENVIWARA00401AA
Date started:	5.5.2009
Date completed:	5.5.2009
Logged by:	DCH
Checked by:	

Client: DEPARTMENT OF COMMERCE

Principal:

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

Borehole Location: MANILLA HOSPITAL

drill model and mounting: 4WD Drill Rig | Easting: | slope: -90° | R.L. Surface: Not Measured

hole diameter: 125 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
ADV			None Observed	E					**FILL:** Gravelly SAND, fine to medium grained, pale to dark brown, gravel fine grained.	D			FILL
				E		0.5			**FILL:** Gravelly CLAY, medium plasticity, orange / dark brown, gravel fine grained.				No odours observed.
				E		1.0		CH	**Gravelly CLAY:** medium to high plasticity, orange / dark brown, gravel fine to medium grained.	M<Wp			RESIDUAL
						1.5		CH	**Gravelly CLAY:** high plasticity, pale to dark brown, gravel fine to medium grained.				EXTREMELY WEATHERED CLAYSTONE
				E		2.0			Terminated due to refusal on bedrock. Borehole SB 8 terminated at 2m				
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration 1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Excavation

Excavation No. **TP 1**

Sheet 1 of 1

Office Job No.: **ENVIWARA00401AA**

Client: ***DEPARTMENT OF COMMERCE***

Date started: ***6.5.2009***

Principal:

Date completed: ***6.5.2009***

Project: ***PHASE 2 ENVIRONMENTAL SITE ASSESSMENT***

Logged by: ***DCH***

Test pit location: ***MANILLA HOSPITAL***

Checked by: PAK

equipment type and model: 5t Excavator | Pit Orientation: | Easting: m | R.L. Surface: Not Measured

excavation dimensions: 3m long 1m wide | Northing: m | datum:

excavation information						material substance						
method	penetration 1 2 3	support	water	notes samples, tests, etc	RL / depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	None Observed	E	0.0			**FILL:** Gravelly SAND, fine to medium grained, brown / grey, gravel fine to coarse grained. Fill contains gravels, brick fragments, cement fragments, plastic, glass.	D			FILL
				E	0.5		CH	**Gravelly CLAY:** medium to high plasticity, orange / brown, gravel fine to medium grained.	M<Wp			RESIDUAL No odours observed.
				E	1.0		CH	**Gravelly CLAY:** high plasticity, pale to dark brown / orange, gravel fine to medium grained.				EXTREMELY WEATHERED CLAYSTONE
				E	2.0			Test pit TP 1 terminated at 2m				
					2.5							
					3.0							
					3.5							
					4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration
1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description
based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Engineering Log - Excavation

Excavation No. **TP 2**

Sheet 1 of 1

Office Job No.: **ENVIWARA00401AA**

Client: **DEPARTMENT OF COMMERCE**

Date started: **6.5.2009**

Principal:

Date completed: **6.5.2009**

Project: **PHASE 2 ENVIRONMENTAL SITE ASSESSMENT**

Logged by: **DCH**

Test pit location: **MANILLA HOSPITAL**

Checked by:

equipment type and model: 5t Excavator | Pit Orientation: | Easting: m | R.L. Surface: Not Measured

excavation dimensions: 3m long 1m wide | Northing: m | datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	None Observed	E		0.0			FILL: Gravelly SAND, fine to medium grained, dark brown / orange, gravel fine to coarse grained. Fill contains gravels, brick fragments, plastic, glass and pieces of ceramic pipe.	D			FILL
				E		0.5		CH	Gravelly CLAY: medium to high plasticity, orange / brown, gravel fine to medium grained.	M<Wp			RESIDUAL No odours observed.
				E		1.0		CH	Gravelly CLAY: high plasticity, pale to dark brown, gravel fine to medium grained.				EXTREMELY WEATHERED CLAYSTONE
				E		1.5							
						2.0			Test pit TP 2 terminated at 2m				
						2.5							
						3.0							
						3.5							
						4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

TESTPIT 00401AA.GPJ COFFEY.GDT 5.19.09

Form GEO 5.2 Issue 3 Rev.2

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Engineering Log - Excavation

Excavation No. **TP 3**

Sheet 1 of 1

Office Job No.: **ENVIWARA00401AA**

Client: ***DEPARTMENT OF COMMERCE***

Date started: ***6.5.2009***

Principal:

Date completed: ***6.5.2009***

Project: ***PHASE 2 ENVIRONMENTAL SITE ASSESSMENT***

Logged by: ***DCH***

Test pit location: ***MANILLA HOSPITAL***

Checked by:

equipment type and model: 5t Excavator | Pit Orientation: | Easting: m | R.L. Surface: Not Measured

excavation dimensions: 3m long 1m wide | Northing: m | datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	None Observed	E		0.5			**FILL:** Gravelly SAND, fine to medium grained, grey, gravel fine to coarse grained. Fill consists of grey ash material to 2m depth. ACM observed at 1m depth (20cm x 10cm).	D			FILL No odours observed.
				E		1.0							
				E		1.5							
				E		2.0							
				E		2.5			FILL: Gravelly SAND, fine to medium grained, dark brown / orange, gravel fine to coarse grained. Fill contains gravels, brick fragments and plastic.				FILL
				E		3.0							
						3.5			Test pit TP 3 terminated at 3m				
						4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

TESTPIT 00401AA.GPJ COFFEY.GDT 5.19.09

Form GEO 5.2 Issue 3 Rev.2

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Engineering Log - Excavation

Excavation No. **TP 4**

Sheet 1 of 1

Office Job No.: **ENVIWARA00401AA**

Client: ***DEPARTMENT OF COMMERCE***

Date started: ***6.5.2009***

Principal:

Date completed: ***6.5.2009***

Project: ***PHASE 2 ENVIRONMENTAL SITE ASSESSMENT***

Logged by: ***DCH***

Test pit location: ***MANILLA HOSPITAL***

Checked by:

equipment type and model: 5t Excavator | Pit Orientation: | Easting: m | R.L. Surface: Not Measured

excavation dimensions: 3m long 1m wide | Northing: m | datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
E		N	None Observed	E		0.5			FILL: Gravelly SAND, fine to medium grained, grey, gravel fine to coarse grained. Ash material to 0.1m depth.	D			FILL
				E		1.0			FILL: Gravelly SAND, fine to coarse grained, pale to dark brown / orange, gravel fine to coarse grained. Fill contains gravels, brick fragments, cement fragments, plastic, glass, metal and timber pieces.				FILL No odours observed.
				E		1.5							
				E		2.0							
				E		2.5							
						3.0							
						3.5			Test pit TP 4 terminated at 3m				
						4.0							

Sketch

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- S shoring
- N nil

penetration 1 2 3 4 — no resistance ranging to refusal

water
- water level on date shown
- water inflow
- water outflow

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- V vane shear (kPa)
- Bs bulk sample
- E environmental sample
- R refusal

classification symbols and soil description based on unified classification system

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- W_L liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

TESTPIT 00401AA.GPJ COFFEY.GDT 5.19.09

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coffey environments
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Surface Sample Information

Client: Department of Commerce **Project: Phase 2 ESA** **Location: Manilla Hospital**	**Date: 6.05.09** **By: Damien Hendrickx**

Sample I.D	Sample Description	PID Value
SS1	**Topsoil**: Gravelly CLAY, medium to high plasticity, dark brown-orange, with fine to medium grained gravel	4.8
SS2	**Topsoil**: Gravelly SAND, fine to medium grained, brown-orange, with fine to medium grained gravel	3.2
SS3	**Topsoil**: Gravelly SAND, fine to medium grained sand, brown-orange with fine to medium grained gravel	3.9
SS4	**Topsoil**: Gravelly SAND, fine to medium grained, pale to dark brown, with fine to medium grained gravel.	5.0
SS5	**Fill**: Gravelly SAND, fine to medium grained, brown-grey, with fine to coarse grained gravel.	3.2
SS6	**Fill**: Gravelly SAND, dark brown-black, with fine to coarse grained gravel.	7.6
SS7	**Fill**: Gravelly SAND, fine to medium grained, brown-orange, with fine to coarse grained gravel.	2.6
SS8	**Fill**: Gravelly SAND, fine to medium grained, brown, with fine to medium grained gravel.	3.5
SS9	**Topsoil**: Gravelly SAND, fine to medium grained, dark brown, with fine to medium gravel.	3.0
SS10	**Topsoil**: Gravelly SAND, fine to medium grained, dark brown, with fine to coarse grained gravel.	3.6
SS11	**Topsoil**: SAND, fine to medium grained, brown, with some fine to medium grained gravel.	4.2
SS12	**Topsoil**: SAND, fine to medium grained, brown, with some fine to coarse grained gravel.	5.0
SS13	**Topsoil**: SAND, fine to medium grained, dark brown, with some fine to medium gravel.	4.7
SS14	**Fill**: Gravelly SAND, fine to medium grained, brown, with fine to coarse gravel, some rootlets and wood materials.	3.8

coffey environments
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job no: ENVIWARA00401AA

sheet 1 of 3

Photolonisation Detector (PID) Results

client:	***Department of Commerce***	office:	***Warabrook***
principal:		date:	***5 May 2009***
project:	***Phase 2 ESA***	by:	***DCH***
location:	***Manilla Hospital, Manilla NSW***	checked by:	
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 05.05.09

Calibration gas: 100 ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual 0.0 ppm ☑ Span Calibration (100 ppm) Actual Reading 100 ppm

Calibrated by: DCH

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
SB1	0.0-0.1	1 min	0.0	4.6	-	
SB1	0.4-0.5	1 min	0.0	3.3	-	
SB1	0.9-1.0	1 min	0.0	2.1	-	
SB1	1.4-1.5	1 min	0.0	1.5	-	
SB2	0.0-0.1	1 min	0.0	6.7	-	
SB2	0.4-0.5	1 min	0.0	5.2	-	
SB2	0.9-1.0	1 min	0.0	3.8	-	
SB2	1.3-1.74	1 min	0.0	2.2	-	
SB3	0.1-0.2	1 min	0.0	4.5	-	
SB3	0.4-0.5	1 min	0.0	3.6	-	
SB3	0.9-1.0	1 min	0.0	2.9	-	
SB4	0.1-0.2	1 min	0.0	3.8	-	
SB4	0.4-0.5	1 min	0.0	2.9	-	
SB4	0.9-1.0	1 min	0.0	2.2	-	
SB4	1.9-2.0	1 min	0.0	1.6	-	
SB5	0.1-0.2	1 min	0.0	15.8	-	
SB5	0.4-0.5	1 min	0.0	13.2	-	
SB5	0.9-1.0	1 min	0.0	11.6	-	

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

job no:
ENVIWARA00401AA
sheet 2 of 3

Photolonisation Detector (PID) Results

client:	***Department of Commerce***	office:	***Warabrook***
principal:		date:	***5 May 2009***
project:	***Phase 2 ESA***	by:	***DCH***
location:	***Manilla Hospital, Manilla NSW***	checked by:	
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: 5.05.2009 Calibration gas: 100 ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual 0.0 ppm ☑ Span Calibration (100 ppm) Actual Reading _____ ppm

Calibrated by: DCH

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
SB5	1.9-2.0	1 min	0.0	8.5	-	
SB5	2.9-3.0	1 min	0.0	5.1	-	
SB6	0.1-0.2	1 min	0.0	11.5	-	
SB6	0.4-0.5	1 min	0.0	9.8	-	
SB6	0.9-1.0	1 min	0.0	7.5	-	
SB6	1.9-2.0	1 min	0.0	4.8	-	
SB6	2.9-3.0	1 min	0.0	3.7	-	
SB7	0.0-0.1	1 min	0.0	5.5	-	
SB7	0.4-0.5	1 min	0.0	4.6	-	
SB7	0.9-1.0	1 min	0.0	3.8	-	
SB7	1.9-2.0	1 min	0.0	1.9	-	
SB8	0.0-0.1	1 min	0.0	4.8	-	
SB8	0.4-0.5	1 min	0.0	3.2	-	
SB8	0.9-1.0	1 min	0.0	2.6	-	
SB8	1.9-2.0	1 min	0.0	2.0	-	
TP1	0.0-0.1	1 min	0.0	5.5	-	
TP1	0.4-0.5	1 min	0.0	4.3	-	
TP1	0.9-1.0	1 min	0.0	2.8	-	

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job no: ENVIWARA00401AA

sheet 3 of 3

Photolonisation Detector (PID) Results

client:	***Department of Commerce***	office:	***Warabrook***
principal:		date:	***5 May 2009***
project:	***Phase 2 ESA***	by:	***DCH***
location:	***Manilla Hospital, Manilla NSW***	checked by:	
PID serial number:	***MINIRAE 2000 (SN: 110-002708)***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: __06.05.09____ Calibration gas: 100 ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual ___0.0_____ppm ☑ Span Calibration (__100__ppm) Actual Reading _____ ppm

Calibrated by: __DCH__

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
TP1	1.9-2.0	1 min	0.0	1.9	-	
TP2	0.0-0.1	1 min	0.0	4.6	-	
TP2	0.4-0.5	1 min	0.0	4.0	-	
TP2	0.9-1.0	1 min	0.0	3.2	-	
TP2	1.9-2.0	1 min	0.0	1.8	-	
TP3	0.0-0.1	1 min	0.0	5.8	-	
TP3	0.4-0.5	1 min	0.0	5.2	-	
TP3	0.9-1.0	1 min	0.0	4.6	-	
TP3	1.9-2.0	1 min	0.0	2.9	-	
TP3	2.9-3.0	1 min	0.0	1.7	-	
TP4	0.0-0.1	1 min	0.0	4.6	-	
TP4	0.4-0.5	1 min	0.0	3.2	-	
TP4	0.9-1.0	1 min	0.0	2.8	-	
TP4	1.9-2.0	1 min	0.0	1.9	-	
TP4	2.9-3.0	1 min	0.0	1.6	-	

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP1
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED		0.35		CL	TOPSOIL: Gravelly Sandy Silty CLAY, low To medium plasticity, fine grained sand, fine Gravel, dark brown.	M<Wp	H	ALLUVIAL
			1.0		GC	Clayey GRAVEL :medium to coarse gravel, Orange brown,low to medium plasticity Fines.	D	D	ALLUVIAL
			2.0			Test Pit TP 1 Terminated at 2.5m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP2
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed new Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED				CL	FILL: Gravelly CLAY, medium plasticity, Red brown, medium to coarse gravel.	M<Wp	H	Building rubble, iron pipe, fence wire, concrete
			0.35						
		Sample 0.7 to 0.9m			GC	FILL: Clayey Sandy GRAVEL, medium to coarse gravel, brown –red brown, low to medium plasticity clay fines.	D	L	Appeared Loosely Compacted Building Rubble
			0.8						
			1.0		GC/CL	Clayey GRAVEL/Gravelly CLAY : low to Medium plasticity, medium to coarse gravel, Pale 0range & yellow.	M=Wp	H/D	ALLUVIAL
		Sample 1.0 to 1.3m							
			2.0						
						Test Pit TP 2 Terminated at 3.0m			

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP 3
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED	Sample 0.2 to 0.4m	0.4		CL	FILL: Gravelly Silty CLAY, low to medium plasticity, dark brown, fine to medium gravel.	M<Wp	H	TOPSOIL
		Sample 0.4 to 0.7m	0.8		CL	GRAVELLY CLAY, medium plasticity, Red brown,, medium to coarse gravel Fines.	M=Wp	H	ALLUVIAL
		Sample 0.8 to 1.5m	1.0		CL/GC	Sandy Gravelly CLAY/Clayey GRAVEL Medium plasticity, orange & pale brow Coarse sand, medium to coarse gravel.	M=Wp	H	ALLUVIAL
			2.0						
						Test Pit TP 3 Terminated at 2.8m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP 4
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED				CL	FILL: Gravelly CLAY, low to medium plasticity, dark brown, and red, fine to fine to medium gravel.	M<Wp	H	TOPSOIL
			0.3		CL	FILL: Gravelly CLAY, medium plasticity, dark brown,, medium to coarse gravel Fines.	M=Wp		Containing Cobbles & bricks,appeared loosely compacted
			0.8		CL/GC	Sandy Gravelly CLAY/Clayey GRAVEL Medium plasticity, orange & pale brow Coarse sand, medium to coarse gravel.	M<Wp	H	ALLUVIAL
			1.0 1.1			SILTSTONE; pale brown & dark brown			Highly Weathered
			2.0			Test Pit TP 4 Terminated at 2.6m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP 5
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**
	Datum:

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED				CL	FILL: Gravelly CLAY, medium plasticity, Red brown and dark brown, medium to coarse gravel.	M<Wp	H	Appeared well Compacted
							D	L	
			0.7		GP	FILL: GRAVEL, Cobbles to coarse gravel, Red brown, dark brown	D		Appeared Loosely Compacted. Containing building Rubble, bricks,concrete Tin, wood, pipes
		Sample 0.8 to 0.9m	1.0						
		Sample 0.9 to 2.2m							Sides of test pit unstable collapsing
			2.0						
			2.5			SILTSTONE; pale brown & dark brown			Highly Weathered
			3.0			Test Pit TP 5 Terminated at 3.0m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP 6
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**
	Datum:

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED	Sample 0.2 to 0.4m Sample 0.4 to 1.5m	1.0 2.0 2.3		GM	FILL: Silty GRAVEL, (ASH) medium Gravel, grey pale grey,	D D	L	Appeared Loosely compacted . Ash from old boiler Sides of test pit unstable collapsing
			2.7		GP	GRAVEL:coarse to cobbles , pale brown			ALLUVIAL
						SILTSTONE; pale brown & dark brown			Highly Weathered
			3.0			Test Pit TP 6 Terminated at 3.0m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP 7
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED				GP	FILL: GRAVEL, Siltstone, orange brown, With bitumen fragments.	D	L	Appeared Loosely compacted Sides of test pit unstable collapsing
			0.8			SILTSTONE; pale brown .			Highly Weathered
			1.0						
			2.0						
			2.3		GP	SILTSTONE; pale brown & dark brown			Highly Weathered
						Test Pit TP 7 Terminated at 2.8m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

Hunter Geotechnics Pty Limited
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Unit 5 Walter St
PO Box 3003
Singleton NSW 2330

EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP 8
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED				GP	FILL: Clayey GRAVEL, medium to coarse Gravel, pale brown, low to medium , Plasticity fines	D		ALLUVIAL
			0.8			SILTSTONE; pale brown .			Highly Weathered
						Test Pit TP 8 Terminated at 1.5m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

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EXCAVATION LOG

	Project No: HGS 1031
	Hole No: TP 9
	Sheet: 1 of 1
Client: NSW Department of Commerce	**Started:** 13.08.07
Project: Site Investigation for proposed New Hospital Extensions	**Finished:** 13.08.07
Location: Manilla Hospital	**Logged:** RT
Test Location: Refer to Site Plan	**Checked:** V Da Silva
Equipment type: Bob Cat Mini Excavator	**RL surface:**

method	water	Samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency / relative	Comments Notes, structure and additional observations
EXCAVATOR	NO GROUNDWATER OBSERVED				GP	FILL: Clayey GRAVEL, medium to coarse Gravel, pale brown, low to medium , Plasticity fines	D		ALLUVIAL
			0.5			SILTSTONE; pale brown & grey.			Highly Weathered
			1.0						
						Test Pit TP 9 Terminated at 1.5m			

REFER TO IMPORTANT INFORMATION SHEETS FOR DESCRIPTIONS OF SOIL AND ROCK

Appendix B
Laboratory Reports

ANALYTICAL REPORT

14 May 2009

Coffey Environments Pty Ltd
Lot 101, 19 Warabrook Blvd
Warabrook
NSW 2304

Attention: **Emma Coleman**

Your Reference: ENVIWARA00401AA

Our Reference: SE69125

Samples: 80 Soils, 6 Ash, 1 Fibro, 6 Waters
Received: 8/5/09

Preliminary Report Sent: Not Issued

These samples were analysed in accordance with your written instructions.

For and on Behalf of:
SGS ENVIRONMENTAL SERVICES

Client Services:	Simon Matthews	Simon.Matthews@sgs.com
Sample Receipt:	Angela Mamalicos	AU.SampleReceipt.Sydney@sgs.com
Laboratory Manager:	Edward Ibrahim	Edward.Ibrahim@sgs.com

Results Approved and/or Authorised by:

Nick Solarmis
Inorganics Signatory

Ravee Sivasubramaniam
Asbestos Signatory

Ly Kim Ha
Organics Signatory

Huong Crawford
Metals Signatory

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VCHs(37) in soil Sydney Water Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-18 SB5 Soil 5/05/2009 0.9-1.0	SE69125-26 SB7 Soil 5/05/2009 0.0-0.1
Date extracted		11/05/2009	11/05/2009
Date analysed		12/05/2009	12/05/2009
Dichlorodifluoromethane	mg/kg	<0.50	<0.50
Chloromethane	mg/kg	<0.50	<0.50
Vinyl Chloride	mg/kg	<0.50	<0.50
Bromomethane	mg/kg	<0.50	<0.50
Chloroethane	mg/kg	<0.50	<0.50
Trichlorofluoromethane	mg/kg	<0.50	<0.50
1,1-Dichloroethene	mg/kg	<0.50	<0.50
trans-1,2-Dichloroethene	mg/kg	<0.50	<0.50
1,1-Dichloroethane	mg/kg	<0.50	<0.50
cis-1,2-Dichloroethene	mg/kg	<0.50	<0.50
Bromochloromethane	mg/kg	<0.50	<0.50
Chloroform	mg/kg	<1.0	<1.0
2,2-Dichloropropane	mg/kg	<0.50	<0.50
1,2-Dichloroethane	mg/kg	<0.50	<0.50
1,1,1-Trichloroethane	mg/kg	<0.50	<0.50
1,1-Dichloropropene	mg/kg	<0.50	<0.50
Carbon tetrachloride	mg/kg	<0.50	<0.50
Dibromomethane	mg/kg	<0.50	<0.50
1,2-Dichloropropane	mg/kg	<0.50	<0.50
Trichloroethene	mg/kg	<0.50	<0.50
Bromodichloromethane	mg/kg	<0.50	<0.50
trans-1,3-Dicloropropene	mg/kg	<0.50	<0.50
cis-1,3-Dichloropropene	mg/kg	<0.50	<0.50
1,1,2-Trichloroethane	mg/kg	<0.50	<0.50
1,3-Dichloropropane	mg/kg	<0.50	<0.50
Dibromochloromethane	mg/kg	<0.50	<0.50
1,2-Dibromoethane	mg/kg	<0.50	<0.50
Tetrachloroethene	mg/kg	<0.50	<0.50
1,1,1,2-Tetrachloroethane	mg/kg	<0.50	<0.50
Chlorobenzene	mg/kg	<0.50	<0.50
Bromoform	mg/kg	<0.50	<0.50
1,1,2,2-Tetrachloroethane	mg/kg	<0.50	<0.50
1,2,3-Trichloropropane	mg/kg	<0.50	<0.50
Bromobenzene	mg/kg	<0.50	<0.50

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VCHs(37) in soil Sydney Water Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-18 SB5 Soil 5/05/2009 0.9-1.0	SE69125-26 SB7 Soil 5/05/2009 0.0-0.1
2-Chlorotoluene	mg/kg	<0.50	<0.50
4-Chlorotoluene	mg/kg	<0.50	<0.50
1,3-Dichlorobenzene	mg/kg	<0.50	<0.50
1,4-Dichlorobenzene	mg/kg	<0.50	<0.50
1,2-Dichlorobenzene	mg/kg	<0.50	<0.50
1,2-Dibromo-3-chloropropane	mg/kg	<0.50	<0.50
1,2,4-Trichlorobenzene	mg/kg	<0.50	<0.50
Hexachlorobutadiene	mg/kg	<0.50	<0.50
1,2,3-Trichlorobenzene	mg/kg	<0.50	<0.50
Dibromofluoromethane	%	95	98
1,2-Dichloroethane-d4	%	98	95
Toluene-*d8 Surrogate 2*	%	100	98
4-Bromofluorobenzene *Surrogate 3*	%	95	94

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BTEX in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-1 SB1 Soil 5/05/2009 0.0-0.1	SE69125-10 SB3 Soil 5/05/2009 0.4-0.5	SE69125-12 SB4 Soil 5/05/2009 0.1-0.2	SE69125-18 SB5 Soil 5/05/2009 0.9-1.0	SE69125-20 SB5 Soil 5/05/2009 2.9-3.0
Date Extracted (BTEX)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (BTEX)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	0.8	<0.5	<0.5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
m&p- Xylenes	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
o- Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	<1.5	<1.5	<1.5	<1.5	<1.5
BTEX Surrogate (%)	%	91	88	77	85	101

BTEX in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-22 SB6 Soil 5/05/2009 0.4-0.5	SE69125-24 SB6 Soil 5/05/2009 1.9-2.0	SE69125-26 SB7 Soil 5/05/2009 0.0-0.1	SE69125-28 SB7 Soil 5/05/2009 0.9-1.0	SE69125-31 SB8 Soil 5/05/2009 0.0-0.1
Date Extracted (BTEX)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (BTEX)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
m&p- Xylenes	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
o- Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	<1.5	<1.5	<1.5	<1.5	<1.5
BTEX Surrogate (%)	%	74	90	90	92	104

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BTEX in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-35 SS-1 Soil 6/05/2009 -	SE69125-39 SS-5 Soil 6/05/2009 -	SE69125-40 SS-6 Soil 6/05/2009 -	SE69125-41 SS-7 Soil 6/05/2009 -	SE69125-43 SS-9 Soil 6/05/2009 -
Date Extracted (BTEX)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (BTEX)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
m&p- Xylenes	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
o- Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	<1.5	<1.5	<1.5	<1.5	<1.5
BTEX Surrogate (%)	%	106	104	81	89	117

BTEX in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-44 SS-10 Soil 6/05/2009 -	SE69125-46 SS-12 Soil 6/05/2009 -	SE69125-48 SS-14 Soil 6/05/2009 -	SE69125-54 TP2 Soil 6/05/2009 0.4-0.5	SE69125-57 TP3 Soil 6/05/2009 0.0-0.1
Date Extracted (BTEX)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (BTEX)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
m&p- Xylenes	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
o- Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	<1.5	<1.5	<1.5	<1.5	<1.5
BTEX Surrogate (%)	%	81	93	83	83	93

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BTEX in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-67 TP4 Soil 6/05/2009 0.0-0.1	SE69125-69 TP4 Soil 6/05/2009 0.9-1.0	SE69125-72 QC1 Soil 5/05/2009 -	SE69125-79 QC6 Soil 6/05/2009 -
Date Extracted (BTEX)		11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (BTEX)		12/05/2009	12/05/2009	12/05/2009	12/05/2009
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5
m&p-Xylenes	mg/kg	<1.0	<1.0	<1.0	<1.0
o-Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	<1.5	<1.5	<1.5	<1.5
BTEX Surrogate (%)	%	86	84	82	98

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TRH in soil with..C6-C9 by P/T Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-1 SB1 Soil 5/05/2009 0.0-0.1	SE69125-10 SB3 Soil 5/05/2009 0.4-0.5	SE69125-12 SB4 Soil 5/05/2009 0.1-0.2	SE69125-18 SB5 Soil 5/05/2009 0.9-1.0	SE69125-20 SB5 Soil 5/05/2009 2.9-3.0
Date Extracted (TRH C6-C9 PT)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (TRH C6-C9 PT)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_6 - C_9 P&T	mg/kg	<20	<20	<20	<20	<20
Date Extracted (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_{10} - C_{14}	mg/kg	<20	<20	<20	<20	<20
TRH C_{15} - C_{28}	mg/kg	<50	<50	<50	<50	<50
TRH C_{29} - C_{36}	mg/kg	<50	<50	<50	<50	<50

TRH in soil with..C6-C9 by P/T Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-22 SB6 Soil 5/05/2009 0.4-0.5	SE69125-24 SB6 Soil 5/05/2009 1.9-2.0	SE69125-26 SB7 Soil 5/05/2009 0.0-0.1	SE69125-28 SB7 Soil 5/05/2009 0.9-1.0	SE69125-31 SB8 Soil 5/05/2009 0.0-0.1
Date Extracted (TRH C6-C9 PT)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (TRH C6-C9 PT)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_6 - C_9 P&T	mg/kg	<20	<20	<20	<20	<20
Date Extracted (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_{10} - C_{14}	mg/kg	<20	<20	<20	<20	450
TRH C_{15} - C_{28}	mg/kg	<50	<50	<50	<50	1,900
TRH C_{29} - C_{36}	mg/kg	<50	<50	<50	<50	<50

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TRH in soil with..C6-C9 by P/T Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- --- 	SE69125-35 SS-1 Soil 6/05/2009 -	SE69125-39 SS-5 Soil 6/05/2009 -	SE69125-40 SS-6 Soil 6/05/2009 -	SE69125-41 SS-7 Soil 6/05/2009 -	SE69125-43 SS-9 Soil 6/05/2009 -
Date Extracted (TRH C6-C9 PT)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (TRH C6-C9 PT)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_6 - C_9 P&T	mg/kg	<20	<20	<20	<20	<20
Date Extracted (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_{10} - C_{14}	mg/kg	150	<20	28	<20	<20
TRH C_{15} - C_{28}	mg/kg	130	<50	180	<50	<50
TRH C_{29} - C_{36}	mg/kg	130	<50	120	<50	<50

TRH in soil with..C6-C9 by P/T Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- --- 	SE69125-44 SS-10 Soil 6/05/2009 -	SE69125-46 SS-12 Soil 6/05/2009 -	SE69125-48 SS-14 Soil 6/05/2009 -	SE69125-54 TP2 Soil 6/05/2009 0.4-0.5	SE69125-57 TP3 Soil 6/05/2009 0.0-0.1
Date Extracted (TRH C6-C9 PT)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (TRH C6-C9 PT)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_6 - C_9 P&T	mg/kg	<20	<20	<20	<20	<20
Date Extracted (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_{10} - C_{14}	mg/kg	<20	26	<20	<20	<20
TRH C_{15} - C_{28}	mg/kg	<50	260	<50	<50	<50
TRH C_{29} - C_{36}	mg/kg	51	84	<50	<50	<50

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TRH in soil with..C6-C9 by P/T Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-67 TP4 Soil 6/05/2009 0.0-0.1	SE69125-69 TP4 Soil 6/05/2009 0.9-1.0	SE69125-72 QC1 Soil 5/05/2009 -	SE69125-79 QC6 Soil 6/05/2009 -
Date Extracted (TRH C6-C9 PT)		11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (TRH C6-C9 PT)		12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_6 - C_9 P&T	mg/kg	<20	<20	<20	<20
Date Extracted (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed (TRH C10-C36)		12/05/2009	12/05/2009	12/05/2009	12/05/2009
TRH C_{10} - C_{14}	mg/kg	<20	<20	<20	180
TRH C_{15} - C_{28}	mg/kg	<50	<50	<50	300
TRH C_{29} - C_{36}	mg/kg	<50	<50	<50	200

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PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-1 SB1 Soil 5/05/2009 0.0-0.1	SE69125-10 SB3 Soil 5/05/2009 0.4-0.5	SE69125-12 SB4 Soil 5/05/2009 0.1-0.2	SE69125-18 SB5 Soil 5/05/2009 0.9-1.0	SE69125-20 SB5 Soil 5/05/2009 2.9-3.0
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Naphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	<0.10	<0.10	0.12	0.11	<0.10
Pyrene	mg/kg	<0.10	<0.10	<0.10	0.17	<0.10
Benzo[a]anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*b,k*]fluoranthene	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo[*a*]pyrene	mg/kg	<0.05	<0.05	<0.05	0.11	<0.05
Indeno[*123-cd*]pyrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo[*ah*]anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*ghi*]perylene	mg/kg	<0.10	<0.10	<0.10	0.14	<0.10
Total PAHs (sum)	mg/kg	<1.7	<1.7	<1.77	<1.93	<1.7
Nitrobenzene-d5	%	88	82	81	72	72
2-Fluorobiphenyl	%	103	98	101	92	87
p -Terphenyl-*d14*	%	90	82	75	80	81

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PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-22 SB6 Soil 5/05/2009 0.4-0.5	SE69125-24 SB6 Soil 5/05/2009 1.9-2.0	SE69125-26 SB7 Soil 5/05/2009 0.0-0.1	SE69125-28 SB7 Soil 5/05/2009 0.9-1.0	SE69125-31 SB8 Soil 5/05/2009 0.0-0.1
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Naphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	0.10	<0.10	0.17	<0.10	<0.10
Anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	<0.10	<0.10	0.25	<0.10	<0.10
Pyrene	mg/kg	<0.10	<0.10	0.25	<0.10	<0.10
Benzo[*a*]anthracene	mg/kg	<0.10	<0.10	0.12	<0.10	<0.10
Chrysene	mg/kg	<0.10	<0.10	0.12	<0.10	<0.10
Benzo[*b,k*]fluoranthene	mg/kg	<0.20	<0.20	0.20	<0.20	<0.20
Benzo[*a*]pyrene	mg/kg	<0.05	0.05	0.10	<0.05	<0.05
Indeno[*123-cd*]pyrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo[*ah*]anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*ghi*]perylene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Total PAHs (sum)	mg/kg	<1.7	<1.7	<2.21	<1.7	<1.7
Nitrobenzene-d5	%	82	86	83	73	92
2-Fluorobiphenyl	%	103	105	101	88	101
p -Terphenyl-*d14*	%	80	92	87	70	99

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PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-35 SS-1 Soil 6/05/2009 -	SE69125-39 SS-5 Soil 6/05/2009 -	SE69125-40 SS-6 Soil 6/05/2009 -	SE69125-41 SS-7 Soil 6/05/2009 -	SE69125-43 SS-9 Soil 6/05/2009 -
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Naphthalene	mg/kg	<0.10	<0.10	0.24	<0.10	<0.10
2-Methylnaphthalene	mg/kg	<0.10	<0.10	0.34	<0.10	<0.10
1-Methylnaphthalene	mg/kg	<0.10	<0.10	0.25	<0.10	<0.10
Acenaphthylene	mg/kg	<0.10	<0.10	0.27	<0.10	<0.10
Acenaphthene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	<0.10	<0.10	0.21	<0.10	<0.10
Phenanthrene	mg/kg	<0.10	<0.10	2.2	<0.10	<0.10
Anthracene	mg/kg	<0.10	<0.10	1.1	<0.10	<0.10
Fluoranthene	mg/kg	<0.10	<0.10	6.3	<0.10	<0.10
Pyrene	mg/kg	<0.10	<0.10	5.2	<0.10	<0.10
Benzo[*a*]anthracene	mg/kg	<0.10	<0.10	5.4	<0.10	<0.10
Chrysene	mg/kg	<0.10	<0.10	4.4	<0.10	<0.10
Benzo[*b,k*]fluoranthene	mg/kg	<0.20	<0.20	11	<0.20	<0.20
Benzo[*a*]pyrene	mg/kg	<0.05	<0.05	4.4	<0.05	<0.05
Indeno[*123-cd*]pyrene	mg/kg	<0.10	<0.10	2.9	<0.10	<0.10
Dibenzo[*ah*]anthracene	mg/kg	<0.10	<0.10	0.66	<0.10	<0.10
Benzo[*ghi*]perylene	mg/kg	<0.10	<0.10	2.6	<0.10	<0.10
Total PAHs (sum)	mg/kg	<1.7	<1.7	<47.68	<1.7	<1.7
Nitrobenzene-d5	%	82	84	93	107	110
2-Fluorobiphenyl	%	94	98	98	102	104
p -Terphenyl-*d14*	%	89	90	92	95	98

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PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-44 SS-10 Soil 6/05/2009 -	SE69125-46 SS-12 Soil 6/05/2009 -	SE69125-48 SS-14 Soil 6/05/2009 -	SE69125-49 TP1 Soil 6/05/2009 0.0-0.1	SE69125-54 TP2 Soil 6/05/2009 0.4-0.5
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Naphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*a*]anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*b,k*]fluoranthene	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo[*a*]pyrene	mg/kg	<0.05	<0.05	<0.05	0.08	0.06
Indeno[*123-cd*]pyrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo[*ah*]anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*ghi*]perylene	mg/kg	<0.10	<0.10	<0.10	0.11	0.14
Total PAHs (sum)	mg/kg	<1.7	<1.7	<1.7	<1.79	<1.80
Nitrobenzene-d5	%	104	105	102	95	102
2-Fluorobiphenyl	%	99	103	94	89	96
p -Terphenyl-*d14*	%	92	96	91	87	92

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PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-57 TP3 Soil 6/05/2009 0.0-0.1	SE69125-67 TP4 Soil 6/05/2009 0.0-0.1	SE69125-69 TP4 Soil 6/05/2009 0.9-1.0	SE69125-72 QC1 Soil 5/05/2009 -	SE69125-79 QC6 Soil 6/05/2009 -
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Naphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[a]anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*b,k*]fluoranthene	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo[*a*]pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[*123-cd*]pyrene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo[*ah*]anthracene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo[*ghi*]perylene	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Total PAHs (sum)	mg/kg	<1.7	<1.7	<1.7	<1.7	<1.7
Nitrobenzene-d5	%	89	107	91	83	92
2-Fluorobiphenyl	%	90	99	86	90	89
p -Terphenyl-*d14*	%	69	97	82	94	88

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PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-8 2 QC8 Soil 6/05/2009 -
Date Extracted		12/05/2009
Date Analysed		12/05/2009
Naphthalene	mg/kg	<0.10
2-Methylnaphthalene	mg/kg	<0.10
1-Methylnaphthalene	mg/kg	<0.10
Acenaphthylene	mg/kg	<0.10
Acenaphthene	mg/kg	<0.10
Fluorene	mg/kg	<0.10
Phenanthrene	mg/kg	<0.10
Anthracene	mg/kg	<0.10
Fluoranthene	mg/kg	0.14
Pyrene	mg/kg	0.15
Benzo[*a*]anthracene	mg/kg	0.15
Chrysene	mg/kg	0.13
Benzo[*b,k*]fluoranthene	mg/kg	0.33
Benzo[*a*]pyrene	mg/kg	0.11
Indeno[*123-cd*]pyrene	mg/kg	0.16
Dibenzo[*ah*]anthracene	mg/kg	<0.10
Benzo[*ghi*]perylene	mg/kg	0.22
Total PAHs (sum)	mg/kg	<2.29
Nitrobenzene-d5	%	96
2-Fluorobiphenyl	%	90
p -Terphenyl-*d14*	%	88

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OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-1 SB1 Soil 5/05/2009 0.0-0.1	SE69125-10 SB3 Soil 5/05/2009 0.4-0.5	SE69125-31 SB8 Soil 5/05/2009 0.0-0.1	SE69125-35 SS-1 Soil 6/05/2009 -	SE69125-39 SS-5 Soil 6/05/2009 -
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC (Lindane)	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
Aldrin	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
delta-BHC	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
o,p-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-Endosulfan	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
cis-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
p,p-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
o,p-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
o,p-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-Endosulfan	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
p,p-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
p,p-DDT	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
Endrin Aldehyde	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
Endrin Ketone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	109	116	112	114	107

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OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-43 SS-9 Soil 6/05/2009 -	SE69125-45 SS-11 Soil 6/05/2009 -	SE69125-48 SS-14 Soil 6/05/2009 -	SE69125-49 TP1 Soil 6/05/2009 0.0-0.1	SE69125-54 TP2 Soil 6/05/2009 0.4-0.5
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC (Lindane)	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
Aldrin	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
delta-BHC	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
o,p-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-Endosulfan	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
cis-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
p,p-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
o,p-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
o,p-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-Endosulfan	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
p,p-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
p,p-DDT	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
Endrin Aldehyde	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
Endrin Ketone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	113	115	111	119	79

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OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-72 QC1 Soil 5/05/2009 -	SE69125-79 QC6 Soil 6/05/2009 -	SE69125-82 QC8 Soil 6/05/2009 -
Date Extracted		12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC (Lindane)	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
o,p-DDE	mg/kg	<0.1	<0.1	<0.1
alpha-Endosulfan	mg/kg	<0.1	<0.1	<0.1
trans-Chlordane	mg/kg	<0.1	<0.1	<0.1
cis-Chlordane	mg/kg	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	<0.1	<0.1	<0.1
p,p-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
o,p-DDD	mg/kg	<0.1	<0.1	<0.1
o,p-DDT	mg/kg	<0.1	<0.1	<0.1
beta-Endosulfan	mg/kg	<0.1	<0.1	<0.1
p,p-DDD	mg/kg	<0.1	<0.1	<0.1
p,p-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	<0.1	<0.1	<0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	87	87	97

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PCBs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-1 SB1 Soil 5/05/2009 0.0-0.1	SE69125-31 SB8 Soil 5/05/2009 0.0-0.1	SE69125-39 SS-5 Soil 6/05/2009 -	SE69125-49 TP1 Soil 6/05/2009 0.0-0.1	SE69125-72 QC1 Soil 5/05/2009 -
Date Extracted		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009	12/05/2009	12/05/2009	12/05/2009
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
Arochlor 1262	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1268	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PCB	mg/kg	<0.90	<0.90	<0.90	<0.90	<0.90
PCB_Surrogate 1	%	109	112	107	119	87

PCBs in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-82 QC8 Soil 6/05/2009 -
Date Extracted		12/05/2009
Date Analysed		12/05/2009
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
Arochlor 1262	mg/kg	<0.1
Arochlor 1268	mg/kg	<0.1
Total Positive PCB	mg/kg	<0.90
PCB_Surrogate 1	%	97

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Total Phenolics in Soil Our Reference:	UNITS	SE69125-18	SE69125-26
Your Reference	----------	SB5	SB7
Sample Matrix	----------	Soil	Soil
Date Sampled		5/05/2009	5/05/2009
Depth		0.9-1.0	0.0-0.1
Date Extracted (Phenols)		11/05/2009	11/05/2009
Date Analysed (Phenols)		11/05/2009	11/05/2009
Total Phenolics (as Phenol)	mg/kg	<0.1	<0.1

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Metals in Soil by ICP-OES Our Reference:	UNITS	SE69125-1	SE69125-5	SE69125-10	SE69125-12	SE69125-18
Your Reference	----------	SB1	SB2	SB3	SB4	SB5
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009
Depth		0.0-0.1	0.0-0.1	0.4-0.5	0.1-0.2	0.9-1.0
Date Extracted (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Arsenic	mg/kg	6	6	3	8	6
Cadmium	mg/kg	0.4	0.5	0.5	0.3	0.4
Chromium	mg/kg	20	23	10	15	16
Copper	mg/kg	20	22	33	19	26
Lead	mg/kg	20	12	28	9	280
Nickel	mg/kg	19	18	8.4	13	14
Zinc	mg/kg	58	46	73	35	150

Metals in Soil by ICP-OES Our Reference:	UNITS	SE69125-20	SE69125-22	SE69125-24	SE69125-26	SE69125-28
Your Reference	----------	SB5	SB6	SB6	SB7	SB7
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009
Depth		2.9-3.0	0.4-0.5	1.9-2.0	0.0-0.1	0.9-1.0
Date Extracted (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Arsenic	mg/kg	7	4	<3	4	4
Cadmium	mg/kg	0.6	0.4	<0.3	0.4	0.4
Chromium	mg/kg	20	14	11	21	17
Copper	mg/kg	56	64	8.6	20	20
Lead	mg/kg	9.3	59	4	17	24
Nickel	mg/kg	20	11	6.4	16	17
Zinc	mg/kg	65	120	16	120	44

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-31 SB8 Soil 5/05/2009 0.0-0.1	SE69125-32 SB8 Soil 5/05/2009 0.4-0.5	SE69125-35 SS-1 Soil 6/05/2009 -	SE69125-37 SS-3 Soil 6/05/2009 -	SE69125-39 SS-5 Soil 6/05/2009 -
Date Extracted (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Arsenic	mg/kg	3	4	6	4	5
Cadmium	mg/kg	0.3	0.4	0.5	0.5	0.4
Chromium	mg/kg	14	21	20	21	18
Copper	mg/kg	18	24	24	25	18
Lead	mg/kg	4	7	22	7	9
Nickel	mg/kg	16	21	13	24	18
Zinc	mg/kg	32	34	370	57	140

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-40 SS-6 Soil 6/05/2009 -	SE69125-41 SS-7 Soil 6/05/2009 -	SE69125-43 SS-9 Soil 6/05/2009 -	SE69125-44 SS-10 Soil 6/05/2009 -	SE69125-45 SS-11 Soil 6/05/2009 -
Date Extracted (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Arsenic	mg/kg	5	<3	7	5	4
Cadmium	mg/kg	0.5	<0.3	0.5	0.3	<0.3
Chromium	mg/kg	18	7.2	22	19	17
Copper	mg/kg	22	7.4	20	18	16
Lead	mg/kg	32	21	30	15	7
Nickel	mg/kg	18	3.7	14	19	17
Zinc	mg/kg	92	280	82	66	40

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-46 SS-12 Soil 6/05/2009 -	SE69125-48 SS-14 Soil 6/05/2009 -	SE69125-49 TP1 Soil 6/05/2009 0.0-0.1	SE69125-54 TP2 Soil 6/05/2009 0.4-0.5	SE69125-57 TP3 Soil 6/05/2009 0.0-0.1
Date Extracted (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Arsenic	mg/kg	4	5	13	4	<3
Cadmium	mg/kg	<0.3	<0.3	0.4	0.4	<0.3
Chromium	mg/kg	16	14	11	11	2.5
Copper	mg/kg	15	14	31	20	7.9
Lead	mg/kg	14	8	18	7	5
Nickel	mg/kg	15	14	12	7.9	3.3
Zinc	mg/kg	52	41	52	43	19

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-67 TP4 Soil 6/05/2009 0.0-0.1	SE69125-69 TP4 Soil 6/05/2009 0.9-1.0	SE69125-72 QC1 Soil 5/05/2009 -	SE69125-79 QC6 Soil 6/05/2009 -	SE69125-82 QC8 Soil 6/05/2009 -
Date Extracted (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Metals)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Arsenic	mg/kg	<3	6	5	6	11
Cadmium	mg/kg	0.3	0.5	0.3	0.6	0.4
Chromium	mg/kg	15	26	18	23	12
Copper	mg/kg	19	21	18	23	25
Lead	mg/kg	7	32	15	19	20
Nickel	mg/kg	9.1	18	17	13	12
Zinc	mg/kg	22	95	51	220	46

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Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE69125-1	SE69125-5	SE69125-10	SE69125-12	SE69125-18
Your Reference	----------	SB1	SB2	SB3	SB4	SB5
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009
Depth		0.0-0.1	0.0-0.1	0.4-0.5	0.1-0.2	0.9-1.0
Date Extracted (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Mercury	mg/kg	<0.05	<0.05	0.08	<0.05	0.29

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE69125-20	SE69125-22	SE69125-24	SE69125-26	SE69125-28
Your Reference	----------	SB5	SB6	SB6	SB7	SB7
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009
Depth		2.9-3.0	0.4-0.5	1.9-2.0	0.0-0.1	0.9-1.0
Date Extracted (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Mercury	mg/kg	<0.05	0.53	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE69125-31	SE69125-32	SE69125-35	SE69125-37	SE69125-39
Your Reference	----------	SB8	SB8	SS-1	SS-3	SS-5
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	6/05/2009	6/05/2009	6/05/2009
Depth		0.0-0.1	0.4-0.5	-	-	-
Date Extracted (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE69125-40	SE69125-41	SE69125-43	SE69125-44	SE69125-45
Your Reference	----------	SS-6	SS-7	SS-9	SS-10	SS-11
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/05/2009	6/05/2009	6/05/2009	6/05/2009	6/05/2009
Depth		-	-	-	-	-
Date Extracted (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Mercury	mg/kg	0.09	<0.05	0.09	0.05	0.06

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Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE69125-46	SE69125-48	SE69125-49	SE69125-54	SE69125-57
Your Reference	----------	SS-12	SS-14	TP1	TP2	TP3
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/05/2009	6/05/2009	6/05/2009	6/05/2009	6/05/2009
Depth		-	-	0.0-0.1	0.4-0.5	0.0-0.1
Date Extracted (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE69125-67	SE69125-69	SE69125-72	SE69125-79	SE69125-82
Your Reference	----------	TP4	TP4	QC1	QC6	QC8
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/05/2009	6/05/2009	5/05/2009	6/05/2009	6/05/2009
Depth		0.0-0.1	0.9-1.0	-	-	-
Date Extracted (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Date Analysed (Mercury)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Mercury	mg/kg	<0.05	0.09	<0.05	0.05	<0.05

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Asbestos ID in soil Our Reference:	UNITS	SE69125-18	SE69125-26	SE69125-35	SE69125-39	SE69125-45
Your Reference	----------	SB5	SB7	SS-1	SS-5	SS-11
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	6/05/2009	6/05/2009	6/05/2009
Depth		0.9-1.0	0.0-0.1	-	-	-
Date Analysed		13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009
Sample Description		38g soil,rocks	65g soil,plant matter	47g soil,plant matter,clay	44g sand,soil,plant matter	107g soil,plant matter
Asbestos ID in soil	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID in soil Our Reference:	UNITS	SE69125-48	SE69125-49	SE69125-69
Your Reference	----------	SS-14	TP1	TP4
Sample Matrix	----------	Soil	Soil	Soil
Date Sampled		6/05/2009	6/05/2009	6/05/2009
Depth		-	0.0-0.1	0.9-1.0
Date Analysed		13/05/2009	13/05/2009	13/05/2009
Sample Description		121g soil,plant matter	90g clay,rocks	87g soil,clay,rocks
Asbestos ID in soil	-	No asbestos detected	No asbestos detected	No asbestos detected

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BTEX in Water (µg/L) Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-86 QCA Water 5/05/2009 -	SE69125-87 QCB Water 6/05/2009 -	SE69125-88 TB #1 Water 4/05/2009 -	SE69125-90 WTS #1 Water 5/05/2009 -
Date Extracted (BTEX)		12/05/2009	12/05/2009	12/05/2009	12/05/2009
Date Analysed (BTEX)		12/05/2009	12/05/2009	12/05/2009	12/05/2009
Benzene	µg/L	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.5
m&p-Xylene	µg/L	<1	<1	<1	<1
o-Xylene	µg/L	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	<1.5	<1.5	<1.5	<1.5
Surrogate	%	116	122	121	123

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TRH C6-C9 by P/T ONLY-in water Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-8 8 TB #1 Water 4/05/2009 -
Date Extracted (TRH C6-C9 PT)		12/05/2009
Date Analysed (TRH C6-C9 PT)		12/05/2009
TRH C_6 - C_9 P&T in µg/L	µg/L	<40

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TRH in water with C6-C9 by P/T Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-86 QCA Water 5/05/2009 -	SE69125-87 QCB Water 6/05/2009 -
Date Extracted (TRH C6-C9 PT)		12/05/2009	12/05/2009
Date Analysed (TRH C6-C9 PT)		12/05/2009	12/05/2009
TRH C_6 - C_9 P&T in µg/L	µg/L	<40	<40
Date Extracted (TRH C10-C36)		12/05/2009	12/05/2009
Date Analysed (TRH C10-C36)		12/05/2009	12/05/2009
TRH C_{10} - C_{14}	µg/L	<100	<100
TRH C_{15} - C_{28}	µg/L	<200	<200
TRH C_{29} - C_{36}	µg/L	<200	<200

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PAHs in Water Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-86 QCA Water 5/05/2009 -	SE69125-87 QCB Water 6/05/2009 -
Date Extracted		12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009
Naphthalene	µg/L	<0.50	<0.50
2-Methylnaphthalene	µg/L	<0.5	<0.5
1-Methylnaphthalene	µg/L	<0.5	<0.5
Acenaphthylene	µg/L	<0.50	<0.50
Acenaphthene	µg/L	<0.50	<0.50
Fluorene	µg/L	<0.50	<0.50
Phenanthrene	µg/L	<0.50	<0.50
Anthracene	µg/L	<0.50	<0.50
Fluoranthene	µg/L	<0.50	<0.50
Pyrene	µg/L	<0.50	<0.50
Benzo[*a*]anthracene	µg/L	<0.50	<0.50
Chrysene	µg/L	<0.50	<0.50
Benzo[*b,k*]fluoranthene	µg/L	<1.0	<1.0
Benzo[*a*]pyrene	µg/L	<0.50	<0.50
Indeno[*123-cd*]pyrene	µg/L	<0.50	<0.50
Dibenzo[*ah*]anthracene	µg/L	<0.50	<0.50
Benzo[*ghi*]perylene	µg/L	<0.50	<0.50
Total PAHs	µg/L	<9	<9
Nitrobenzene-d5	%	83	77
2-Fluorobiphenyl	%	94	83
p -Terphenyl-*d14*	%	94	91

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OC Pesticides in Water Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS --- ---	SE69125-86 QCA Water 5/05/2009 -	SE69125-87 QCB Water 6/05/2009 -
Date Extracted		12/05/2009	12/05/2009
Date Analysed		12/05/2009	12/05/2009
HCB	µg/L	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2
gamma-BHC(lindane)	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
o,p-DDE	µg/L	<0.2	<0.2
alpha-Endosulfan	µg/L	<0.2	<0.2
trans-Chlordane	µg/L	<0.2	<0.2
cis-Chlordane	µg/L	<0.2	<0.2
trans-Nonachlor	µg/L	<0.2	<0.2
p,p-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
o,p-DDD	µg/L	<0.2	<0.2
o,p-DDT	µg/L	<0.2	<0.2
beta-Endosulfan	µg/L	<0.2	<0.2
p,p-DDD	µg/L	<0.2	<0.2
p,p-DDT	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Endrin Ketone	µg/L	<0.2	<0.2
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	71	70

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PCBs in Water Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-86 QCA Water 5/05/2009 -	SE69125-87 QCB Water 6/05/2009 -
Date Extracted (PCB's)		12/05/2009	12/05/2009
Date Analysed (PCB's)		12/05/2009	12/05/2009
Arochlor 1016	µg/L	<10	<10
Arochlor 1221	µg/L	<10	<10
Arochlor 1232	µg/L	<10	<10
Arochlor 1242	µg/L	<10	<10
Arochlor 1248	µg/L	<10	<10
Arochlor 1254	µg/L	<10	<10
Arochlor 1260	µg/L	<10	<10
Arochlor 1262	µg/L	<10	<10
Arochlor 1268	µg/L	<10	<10
Total Positive PCB	µg/L	<90.00	<90.00
PCB_Surrogate 1	%	71	70

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Trace HM (ICP-MS)-Dissolved Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-86 QCA Water 5/05/2009 -	SE69125-87 QCB Water 6/05/2009 -
Date Extracted (Metals-ICPMS)		11/05/2009	11/05/2009
Date Analysed (Metals-ICPMS)		11/05/2009	11/05/2009
Arsenic	µg/L	<1	<1
Cadmium	µg/L	<0.1	<0.1
Chromium	µg/L	<1	<1
Copper	µg/L	<1	<1
Lead	µg/L	<1	<1
Nickel	µg/L	<1	<1
Zinc	µg/L	73	120

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Mercury Cold Vapor/Hg Analyser Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ---------- ----------	SE69125-86 QCA Water 5/05/2009 -	SE69125-87 QCB Water 6/05/2009 -
Date Extracted (Mercury)		11/05/2009	11/05/2009
Date Analysed (Mercury)		11/05/2009	11/05/2009
Mercury (Dissolved)	mg/L	<0.0005	<0.0005

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Asbestos ID in materials		
Our Reference:	UNITS	SE69125-63
Your Reference	----------	TP3
Sample Matrix	----------	Fibro
Date Sampled		6/05/2009
Depth		0.9-1.0
Date Analysed		13/05/2009
Sample Description		120x10x4mm cement sheet fragments
Asbestos ID in materials	-	Chrysotile asbestos detected Amosite asbestos detected

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Moisture Our Reference:	UNITS	SE69125-1	SE69125-5	SE69125-10	SE69125-12	SE69125-18
Your Reference	----------	SB1	SB2	SB3	SB4	SB5
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009
Depth		0.0-0.1	0.0-0.1	0.4-0.5	0.1-0.2	0.9-1.0
Date Analysed (moisture)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Moisture	%	12	9	12	12	15

Moisture Our Reference:	UNITS	SE69125-20	SE69125-22	SE69125-24	SE69125-26	SE69125-28
Your Reference	----------	SB5	SB6	SB6	SB7	SB7
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	5/05/2009	5/05/2009	5/05/2009
Depth		2.9-3.0	0.4-0.5	1.9-2.0	0.0-0.1	0.9-1.0
Date Analysed (moisture)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Moisture	%	15	18	10	13	8

Moisture Our Reference:	UNITS	SE69125-31	SE69125-32	SE69125-35	SE69125-37	SE69125-39
Your Reference	----------	SB8	SB8	SS-1	SS-3	SS-5
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/05/2009	5/05/2009	6/05/2009	6/05/2009	6/05/2009
Depth		0.0-0.1	0.4-0.5	-	-	-
Date Analysed (moisture)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Moisture	%	6	8	14	4	2

Moisture Our Reference:	UNITS	SE69125-40	SE69125-41	SE69125-43	SE69125-44	SE69125-45
Your Reference	----------	SS-6	SS-7	SS-9	SS-10	SS-11
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/05/2009	6/05/2009	6/05/2009	6/05/2009	6/05/2009
Depth		-	-	-	-	-
Date Analysed (moisture)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Moisture	%	16	3	6	4	3

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Moisture Our Reference:	UNITS	SE69125-46	SE69125-48	SE69125-49	SE69125-54	SE69125-57
Your Reference	----------	SS-12	SS-14	TP1	TP2	TP3
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/05/2009	6/05/2009	6/05/2009	6/05/2009	6/05/2009
Depth		-	-	0.0-0.1	0.4-0.5	0.0-0.1
Date Analysed (moisture)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Moisture	%	9	4	10	11	17

Moisture Our Reference:	UNITS	SE69125-67	SE69125-69	SE69125-72	SE69125-79	SE69125-82
Your Reference	----------	TP4	TP4	QC1	QC6	QC8
Sample Matrix	----------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/05/2009	6/05/2009	5/05/2009	6/05/2009	6/05/2009
Depth		0.0-0.1	0.9-1.0	-	-	-
Date Analysed (moisture)		11/05/2009	11/05/2009	11/05/2009	11/05/2009	11/05/2009
Moisture	%	9	9	25	10	12

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Method ID	Methodology Summary
SEO-019	Volatile Organic Compounds - Soil samples are extracted with methanol, purged and concentrated by a purge and trap apparatus, and then analysed using GC/MS technique. Water samples undergo the same analysis without the extraction step. Based on USEPA 5030B and 8260B.
SEO-018	BTEX / C6-C9 Hydrocarbons - Soil samples are extracted with methanol, purged and concentrated by a purge and trap apparatus, and then analysed using GC/MS technique. Water samples undergo the same analysis without the extraction step. Based on USEPA 5030B and 8260B.
SEO-017	BTEX/TRH C6-C9 - Determination by Purge and Trap Gas Chromatography with Flame Ionisation Detection (FID) and Photo Ionisation Detection (PID). The surrogate spike used is aaa-trifluorotoluene.
SEO-020	Total Recoverable Hydrocarbons - determined by solvent extraction with dichloromethane / acetone for soils and dichloromethane for waters, followed by instrumentation analysis using GC/FID. Where applicable Solid Phase Extraction Manifold technique is used for aliphatic / aromatic fractionation.
SEO-030	Polynuclear Aromatic Hydrocarbons - determined by solvent extraction with dichloromethane / acetone for soils and dichloromethane for waters, followed by instrumentation analysis using GC/MS SIM mode.
SEO-005	OC/OP/PCB - Determination of a suite of Organchlorine Pesticides, Chlorinated Organo-phosphorus Pesticides and Polychlorinated Biphenyls (PCB's) by liquid-liquid extraction using dichloromethane for waters, or mechanical extraction using acetone / hexane for soils, followed by instrumentation analysis using GC/ECD. Based on USEPA 8081/8082.
AN289	Total Phenols - Determined by colourimetric method using Discrete Analyser, following distillation of the sample. Based on APHA 21st Edition 5530B and 5530D.
SEM-010	Determination of elements by ICP-OES following appropriate sample preparation / digestion process. Based on USEPA 6010C / APHA 21st Edition, 3120B.
SEM-005	Mercury - determined by Cold-Vapour AAS following appropriate sample preparation or digestion process. Based on APHA 21st Edition, 3112B.
AN602	Analysed using in house method AN602 - Qualitative identification of Asbestos Fibres, Synthetic Mineral Fibres and Organic Fibres in bulk samples (including building materials and soils) using Polarised Light Microscopy and Dispersion Staining Techniques. Our NATA Accreditation does not currently cover the identification of Synthetic Mineral Fibres and Organic Fibres, however, according to new NATA requirements, the reporting of these fibres is compulsory if detected.
PEO-800	PEO-800 - Volatile Organic Compounds and the C6-C9 Hydrocarbons fraction in waters, soils and sediments analysed by SGS Perth using Purge & Trap GC/MS. Method based on USEPA 8260, contained in SW846 Update 1, July 1992.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN002	Preparation of soils, sediments and sludges undergo analysis by either air drying, compositing, subsampling and 1:5 soil water extraction where required. Moisture content is determined by drying the sample at 105 ± 5°C.

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Method ID	Methodology Summary

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QUALITY CONTROL VCHs(37) in soil Sydney Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date extracted				11/05/09	[NT]	[NT]	LCS	11/05/09
Date analysed				12/05/09	[NT]	[NT]	LCS	12/05/09
Dichlorodifluoromethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Chloromethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	mg/kg	0.50	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Bromomethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Chloroethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	LCS	113%
trans-1,2-Dichloroethene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
cis-1,2-Dichloroethene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Chloroform	mg/kg	1	SEO-019	<1.0	[NT]	[NT]	LCS	110%
2,2-Dichloropropane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,2-Dichloroethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	LCS	123%
1,1,1-Trichloroethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,1-Dichloropropene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Dibromomethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,2-Dichloropropane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Trichloroethene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	LCS	112%
Bromodichloromethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
trans-1,3-Dicloropropene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
cis-1,3-Dichloropropene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,1,2-Trichloroethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,3-Dichloropropane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,2-Dibromoethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,1,1,2-Tetrachloroethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	LCS	122%
Bromoform	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,1,2,2-Tetrachloroethane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]

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QUALITY CONTROL VCHs(37) in soil Sydney Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
1,2,3-Trichloropropane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Bromobenzene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
2-Chlorotoluene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
4-Chlorotoluene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,3-Dichlorobenzene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,4-Dichlorobenzene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,2-Dichlorobenzene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,2-Dibromo-3-chloropropane	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,2,4-Trichlorobenzene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
1,2,3-Trichlorobenzene	mg/kg	0.5	SEO-019	<0.50	[NT]	[NT]	[NR]	[NR]
Dibromofluoromethane	%	0	SEO-019	104	[NT]	[NT]	LCS	101%
1,2-Dichloroethane-d4	%	0	SEO-019	104	[NT]	[NT]	LCS	95%
Toluene-*d8 Surrogate* 2	%	0	SEO-019	100	[NT]	[NT]	LCS	97%
4-Bromofluorobenzene *Surrogate 3*	%	0	SEO-019	91	[NT]	[NT]	LCS	97%

QUALITY CONTROL BTEX in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (BTEX)				11/05/09	SE69125-28	11/05/2009 || 11/05/2009	SE69125-57	11/05/09
Date Analysed (BTEX)				12/05/09	SE69125-28	12/05/2009 || 12/05/2009	SE69125-57	12/05/09
Benzene	mg/kg	0.5	SEO-018	<0.5	SE69125-28	<0.5 || <0.5	SE69125-57	69%
Toluene	mg/kg	0.5	SEO-018	<0.5	SE69125-28	<0.5 || <0.5	SE69125-57	73%
Ethylbenzene	mg/kg	0.5	SEO-018	<0.5	SE69125-28	<0.5 || <0.5	SE69125-57	75%
m&p- Xylenes	mg/kg	1.0	SEO-017	<1.0	SE69125-28	<1.0 || <1.0	SE69125-57	77%
o- Xylene	mg/kg	0.5	SEO-018	<0.5	SE69125-28	<0.5 || <0.5	SE69125-57	76%
Total Xylenes	mg/kg	1.5	SEO-018	<1.5	SE69125-28	<1.5 || <1.5	SE69125-57	77%
BTEX Surrogate (%)	%	0	SEO-018	108	SE69125-28	92 || 89 || RPD: 3	SE69125-57	85%

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QUALITY CONTROL TRH in soil with..C6-C9 by P/T	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (TRH C6-C9 PT)				11/05/09	SE69125-28	11/05/2009 || 11/05/2009	SE69125-57	11/05/09
Date Analysed (TRH C6-C9 PT)				12/05/09	SE69125-28	12/05/2009 || 12/05/2009	SE69125-57	12/05/09
TRH C_6 - C_9 P&T	mg/kg	20	SEO-018	<20	SE69125-28	<20 || <20	SE69125-57	77%
Date Extracted (TRH C10-C36)				12/05/09	SE69125-28	12/05/2009 || [N/T]	SE69125-57	12/05/09
Date Analysed (TRH C10-C36)				12/05/09	SE69125-28	12/05/2009 || [N/T]	SE69125-57	12/05/09
TRH C_{10} - C_{14}	mg/kg	20	SEO-020	<20	SE69125-28	<20 || [N/T]	SE69125-57	109%
TRH C_{15} - C_{28}	mg/kg	50	SEO-020	<50	SE69125-28	<50 || [N/T]	SE69125-57	111%
TRH C_{29} - C_{36}	mg/kg	50	SEO-020	<50	SE69125-28	<50 || [N/T]	SE69125-57	83%

QUALITY CONTROL PAHs in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				12/05/09	SE69125-1	12/05/2009 || 12/05/2009	SE69125-12	12/05/09
Date Analysed				12/05/09	SE69125-1	12/05/2009 || 12/05/2009	SE69125-12	12/05/09
Naphthalene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	SE69125-12	93%
2-Methylnaphthalene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]
1-Methylnaphthalene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]
Acenaphthylene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	SE69125-12	81%
Acenaphthene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	SE69125-12	109%
Fluorene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]
Phenanthrene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	SE69125-12	95%
Anthracene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	SE69125-12	98%
Fluoranthene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	SE69125-12	91%
Pyrene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	SE69125-12	100%
Benzo[a]anthracene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]
Chrysene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]

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QUALITY CONTROL PAHs in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Benzo[*b,k*]fluoranthene	mg/kg	0.2	SEO-030	<0.20	SE69125-1	<0.20 || <0.20	[NR]	[NR]
Benzo[*a*]pyrene	mg/kg	0.05	SEO-030	<0.05	SE69125-1	<0.05 || <0.05	SE69125-12	74%
Indeno[*123-cd*]pyrene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]
Dibenzo[*ah*]anthracene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]
Benzo[*ghi*]perylene	mg/kg	0.1	SEO-030	<0.10	SE69125-1	<0.10 || <0.10	[NR]	[NR]
Total PAHs (sum)	mg/kg	1.75	SEO-030	<1.7	SE69125-1	<1.7 || <1.7	[NR]	[NR]
Nitrobenzene-d5	%	0	SEO-030	85	SE69125-1	88 || 87 || RPD: 1	SE69125-12	84%
2-Fluorobiphenyl	%	0	SEO-030	98	SE69125-1	103 || 102 || RPD: 1	SE69125-12	102%
p -Terphenyl-*d* 14	%	0	SEO-030	86	SE69125-1	90 || 90 || RPD: 0	SE69125-12	83%

QUALITY CONTROL OC Pesticides in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				12/05/09	SE69125-39	12/05/2009 || 12/05/2009	SE69125-49	12/05/09
Date Analysed				12/05/09	SE69125-39	12/05/2009 || 12/05/2009	SE69125-49	12/05/09
HCB	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
gamma-BHC (Lindane)	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Heptachlor	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	SE69125-49	75%
Aldrin	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	SE69125-49	73%
beta-BHC	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
delta-BHC	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	SE69125-49	85%
Heptachlor Epoxide	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
o,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
alpha-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]

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QUALITY CONTROL OC Pesticides in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
trans-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
cis-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
trans-Nonachlor	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
p,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Dieldrin	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	SE69125-49	67%
Endrin	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	SE69125-49	75%
o,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
o,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
beta-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
p,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
p,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	SE69125-49	76%
Endosulfan Sulphate	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Methoxychlor	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Endrin Ketone	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	0	SEO-005	92	SE69125-39	107 || 113 || RPD: 5	SE69125-49	77%

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QUALITY CONTROL PCBs in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				12/05/09	SE69125-39	12/05/2009 || 12/05/2009	SE69125-72	12/05/09
Date Analysed				12/05/09	SE69125-39	12/05/2009 || 12/05/2009	SE69125-72	12/05/09
Arochlor 1016	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Arochlor 1260	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	SE69125-72	74%
Arochlor 1262	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Arochlor 1268	mg/kg	0.1	SEO-005	<0.1	SE69125-39	<0.1 || <0.1	[NR]	[NR]
Total Positive PCB	mg/kg	0.9	SEO-005	<0.90	SE69125-39	<0.90 || <0.90	[NR]	[NR]
PCB_Surrogate 1	%	0	SEO-005	92	SE69125-39	107 || 113 || RPD: 5	SE69125-72	86%

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QUALITY CONTROL Total Phenolics in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Phenols)				11/05/09	[NT]	[NT]	SE69125-1	11/05/09
Date Analysed (Phenols)				11/05/09	[NT]	[NT]	SE69125-1	11/05/09
Total Phenolics (as Phenol)	mg/kg	0.1	AN289	<0.1	[NT]	[NT]	SE69125-1	101%

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Metals)				11/05/2009	SE69125-1	11/05/2009 || 11/05/2009	SE69125-5	11/05/2009
Date Analysed (Metals)				11/05/2009	SE69125-1	11/05/2009 || 11/05/2009	SE69125-5	11/05/2009
Arsenic	mg/kg	3	SEM-010	<3	SE69125-1	6 || 6 || RPD: 0	SE69125-5	70%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE69125-1	0.4 || 0.4 || RPD: 0	SE69125-5	75%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE69125-1	20 || 20 || RPD: 0	SE69125-5	76%
Copper	mg/kg	0.5	SEM-010	<0.5	SE69125-1	20 || 20 || RPD: 0	SE69125-5	83%
Lead	mg/kg	1	SEM-010	<1	SE69125-1	20 || 19 || RPD: 5	SE69125-5	70%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE69125-1	19 || 19 || RPD: 0	SE69125-5	74%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE69125-1	58 || 59 || RPD: 2	SE69125-5	86%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Mercury)				11/05/2009	SE69125-1	11/05/2009 || 11/05/2009	SE69125-5	11/05/2009
Date Analysed (Mercury)				11/05/2009	SE69125-1	11/05/2009 || 11/05/2009	SE69125-5	11/05/2009
Mercury	mg/kg	0.05	SEM-005	<0.05	SE69125-1	<0.05 || <0.05	SE69125-5	100%

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QUALITY CONTROL Asbestos ID in soil	UNITS	LOR	METHOD	Blank
Date Analysed				[NT]

QUALITY CONTROL BTEX in Water (µg/L)	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (BTEX)				12/05/09	[NT]	[NT]	LCS	12/05/09
Date Analysed (BTEX)				12/05/09	[NT]	[NT]	LCS	12/05/09
Benzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	101%
Toluene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	101%
Ethylbenzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	101%
m&p-Xylene	µg/L	1	PEO-800	<1	[NT]	[NT]	LCS	100%
o-Xylene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	101%
Total Xylenes	µg/L	1.5	SEO-018	<1.5	[NT]	[NT]	LCS	101%
Surrogate	%	0	SEO-018	98	[NT]	[NT]	LCS	76%

QUALITY CONTROL TRH C6-C9 by P/T ONLY-in water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (TRH C6-C9 PT)				12/05/09	[NT]	[NT]	LCS	12/05/09
Date Analysed (TRH C6-C9 PT)				12/05/09	[NT]	[NT]	LCS	12/05/09
TRH C_6 - C_9 P&T in µg/L	µg/L	40	SEO-018	<40	[NT]	[NT]	LCS	98%

QUALITY CONTROL TRH in water with C6-C9 by P/T	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (TRH C6-C9 PT)				12/05/09	[NT]	[NT]	LCS	12/05/09
Date Analysed (TRH C6-C9 PT)				12/05/09	[NT]	[NT]	LCS	12/05/09
TRH C_6 - C_9 P&T in µg/L	µg/L	40	SEO-018	<40	[NT]	[NT]	LCS	98%
Date Extracted (TRH C10-C36)				12/05/2009	[NT]	[NT]	LCS	12/05/2009
Date Analysed (TRH C10-C36)				12/05/2009	[NT]	[NT]	LCS	12/05/2009
TRH C_{10} - C_{14}	µg/L	100	SEO-020	<100	[NT]	[NT]	LCS	93%

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QUALITY CONTROL TRH in water with C6-C9 by P/T	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
TRH C_{15} - C_{28}	µg/L	200	SEO-020	<200	[NT]	[NT]	LCS	98%
TRH C_{29} - C_{36}	µg/L	200	SEO-020	<200	[NT]	[NT]	LCS	90%

QUALITY CONTROL PAHs in Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				12/05/09	[NT]	[NT]	LCS	12/05/09
Date Analysed				12/05/09	[NT]	[NT]	LCS	12/05/09
Naphthalene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	102%
2-Methylnaphthalene	µg/L	0.5	SEO-030	<0.5	[NT]	[NT]	[NR]	[NR]
1-Methylnaphthalene	µg/L	0.5	SEO-030	<0.5	[NT]	[NT]	[NR]	[NR]
Acenaphthylene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	94%
Acenaphthene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	121%
Fluorene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	[NR]	[NR]
Phenanthrene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	111%
Anthracene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	113%
Fluoranthene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	113%
Pyrene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	121%
Benzo[*a*]anthracene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	[NR]	[NR]
Benzo[*b,k*]fluoranthene	µg/L	1	SEO-030	<1.0	[NT]	[NT]	[NR]	[NR]
Benzo[*a*]pyrene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	107%
Indeno[*123-cd*]pyrene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	[NR]	[NR]
Dibenzo[*ah*]anthracene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	[NR]	[NR]
Benzo[*ghi*]perylene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	[NR]	[NR]
Total PAHs	µg/L	9	SEO-030	<9	[NT]	[NT]	[NR]	[NR]
Nitrobenzene-d5	%	0	SEO-030	98	[NT]	[NT]	LCS	98%
2-Fluorobiphenyl	%	0	SEO-030	102	[NT]	[NT]	LCS	98%
p -Terphenyl-*d* 14	%	0	SEO-030	106	[NT]	[NT]	LCS	101%

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QUALITY CONTROL OC Pesticides in Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				12/05/09	[NT]	[NT]	LCS	12/05/09
Date Analysed				12/05/09	[NT]	[NT]	LCS	12/05/09
HCB	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
gamma-BHC(lindane)	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
Heptachlor	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	97%
Aldrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	96%
beta-BHC	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
delta-BHC	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	107%
Heptachlor Epoxide	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
o,p-DDE	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-Endosulfan	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
trans-Chlordane	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
cis-Chlordane	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
trans-Nonachlor	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
p,p-DDE	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
Dieldrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	88%
Endrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	98%
o,p-DDD	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
o,p-DDT	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
beta-Endosulfan	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
p,p-DDD	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
p,p-DDT	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	91%
Endosulfan Sulphate	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
Methoxychlor	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Ketone	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	[NR]	[NR]
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	0	SEO-005	92	[NT]	[NT]	LCS	90%

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QUALITY CONTROL PCBs in Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (PCB's)				12/05/09	[NT]	[NT]	LCS	12/05/09
Date Analysed (PCB's)				12/05/09	[NT]	[NT]	LCS	12/05/09
Arochlor 1016	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Arochlor 1260	µg/L	10	SEO-005	<10	[NT]	[NT]	LCS	92%
Arochlor 1262	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Arochlor 1268	µg/L	10	SEO-005	<10	[NT]	[NT]	[NR]	[NR]
Total Positive PCB	µg/L	10	SEO-005	<90	[NT]	[NT]	[NR]	[NR]
PCB_Surrogate 1	%	0	SEO-005	92	[NT]	[NT]	LCS	91%

QUALITY CONTROL Trace HM (ICP-MS)-Dissolved	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Metals-ICPMS)				11/05/2009	[NT]	[NT]	SE69125-1	11/05/2009
Date Analysed (Metals-ICPMS)				11/05/2009	[NT]	[NT]	SE69125-1	11/05/2009
Arsenic	µg/L	1	AN318	<1	[NT]	[NT]	SE69125-1	98%
Cadmium	µg/L	0.1	AN318	<0.1	[NT]	[NT]	SE69125-1	102%
Chromium	µg/L	1	AN318	<1	[NT]	[NT]	SE69125-1	101%
Copper	µg/L	1	AN318	<1	[NT]	[NT]	SE69125-1	99%
Lead	µg/L	1	AN318	<1	[NT]	[NT]	SE69125-1	101%
Nickel	µg/L	1	AN318	<1	[NT]	[NT]	SE69125-1	100%
Zinc	µg/L	1	AN318	<1	[NT]	[NT]	SE69125-1	99%

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QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Mercury)				11/05/2009	[NT]	[NT]	LCS	11/05/2009
Date Analysed (Mercury)				11/05/2009	[NT]	[NT]	LCS	11/05/2009
Mercury (Dissolved)	mg/L	0.0005	SEM-005	<0.0005	[NT]	[NT]	LCS	109%

QUALITY CONTROL Asbestos ID in materials	UNITS	LOR	METHOD	Blank
Date Analysed				[NT]

QUALITY CONTROL Hold sample-**NO test** required	UNITS	LOR	METHOD	Blank
Sample on HOLD		[NT]		[NT]

QUALITY CONTROL Moisture	UNITS	LOR	METHOD	Blank
Date Analysed (moisture)				[NT]
Moisture	%	1	AN002	<1

QUALITY CONTROL TRH in soil with..C6-C9 by P/T	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (TRH C6-C9 PT)		SE69125-67	11/05/2009 || 11/05/2009	[NR]	[NR]
Date Analysed (TRH C6-C9 PT)		SE69125-67	12/05/2009 || 12/05/2009	[NR]	[NR]
TRH C_6 - C_9 P&T	mg/kg	SE69125-67	<20 || <20	[NR]	[NR]
Date Extracted (TRH C10-C36)		SE69125-67	12/05/2009 || 12/05/2009	SE69125-10	12/05/09
Date Analysed (TRH C10-C36)		SE69125-67	12/05/2009 || 12/05/2009	SE69125-10	12/05/09
TRH C_{10} - C_{14}	mg/kg	SE69125-67	<20 || <20	SE69125-10	103%
TRH C_{15} - C_{28}	mg/kg	SE69125-67	<50 || <50	SE69125-10	102%

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QUALITY CONTROL TRH in soil with..C6-C9 by P/T	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
TRH C_{29} - C_{36}	mg/kg	SE69125-67	<50 || <50	SE69125-10	81%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted		SE69125-35	12/05/2009 || 12/05/2009	SE69125-82	12/05/09
Date Analysed		SE69125-35	12/05/2009 || 12/05/2009	SE69125-82	12/05/09
Naphthalene	mg/kg	SE69125-35	<0.10 || <0.10	SE69125-82	93%
2-Methylnaphthalene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]
1-Methylnaphthalene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]
Acenaphthylene	mg/kg	SE69125-35	<0.10 || <0.10	SE69125-82	88%
Acenaphthene	mg/kg	SE69125-35	<0.10 || <0.10	SE69125-82	111%
Fluorene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]
Phenanthrene	mg/kg	SE69125-35	<0.10 || <0.10	SE69125-82	99%
Anthracene	mg/kg	SE69125-35	<0.10 || <0.10	SE69125-82	103%
Fluoranthene	mg/kg	SE69125-35	<0.10 || <0.10	SE69125-82	103%
Pyrene	mg/kg	SE69125-35	<0.10 || <0.10	SE69125-82	106%
Benzo[*a*]anthracene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]
Chrysene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]
Benzo[*b,k*]fluoranthene	mg/kg	SE69125-35	<0.20 || <0.20	[NR]	[NR]
Benzo[*a*]pyrene	mg/kg	SE69125-35	<0.05 || <0.05	SE69125-82	97%
Indeno[*123-cd*]pyrene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]
Dibenzo[*ah*]anthracene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]

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QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Benzo[*ghi*]perylene	mg/kg	SE69125-35	<0.10 || <0.10	[NR]	[NR]
Total PAHs (sum)	mg/kg	SE69125-35	<1.7 || <1.7	[NR]	[NR]
Nitrobenzene-d5	%	SE69125-35	82 || 77 || RPD: 6	SE69125-82	86%
2-Fluorobiphenyl	%	SE69125-35	94 || 87 || RPD: 8	SE69125-82	80%
p -Terphenyl-*d14*	%	SE69125-35	89 || 74 || RPD: 18	SE69125-82	78%

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Metals)		SE69125-31	11/05/2009 || 11/05/2009	SE69125-48	11/05/2009
Date Analysed (Metals)		SE69125-31	11/05/2009 || 11/05/2009	SE69125-48	11/05/2009
Arsenic	mg/kg	SE69125-31	3 || 3 || RPD: 0	SE69125-48	81%
Cadmium	mg/kg	SE69125-31	0.3 || 0.3 || RPD: 0	SE69125-48	82%
Chromium	mg/kg	SE69125-31	14 || 13 || RPD: 7	SE69125-48	89%
Copper	mg/kg	SE69125-31	18 || 17 || RPD: 6	SE69125-48	92%
Lead	mg/kg	SE69125-31	4 || 4 || RPD: 0	SE69125-48	75%
Nickel	mg/kg	SE69125-31	16 || 15 || RPD: 6	SE69125-48	83%
Zinc	mg/kg	SE69125-31	32 || 29 || RPD: 10	SE69125-48	90%

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QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Mercury)		SE69125-31	11/05/2009 || 11/05/2009	LCS	11/05/2009
Date Analysed (Mercury)		SE69125-31	11/05/2009 || 11/05/2009	LCS	11/05/2009
Mercury	mg/kg	SE69125-31	<0.05 || <0.05	LCS	111%

QUALITY CONTROL BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (BTEX)		SE69125-54	11/05/2009 || 11/05/2009
Date Analysed (BTEX)		SE69125-54	12/05/2009 || 12/05/2009
Benzene	mg/kg	SE69125-54	<0.5 || <0.5
Toluene	mg/kg	SE69125-54	<0.5 || <0.5
Ethylbenzene	mg/kg	SE69125-54	<0.5 || <0.5
m&p- Xylenes	mg/kg	SE69125-54	<1.0 || <1.0
o- Xylene	mg/kg	SE69125-54	<0.5 || <0.5
Total Xylenes	mg/kg	SE69125-54	<1.5 || <1.5
BTEX Surrogate (%)	%	SE69125-54	83 || 78 || RPD: 6

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QUALITY CONTROL TRH in soil with..C6-C9 by P/T	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (TRH C6-C9 PT)		SE69125-54	11/05/2009 || 11/05/2009
Date Analysed (TRH C6-C9 PT)		SE69125-54	12/05/2009 || 12/05/2009
TRH C_6 - C_9 P&T	mg/kg	SE69125-54	<20 || <20
Date Extracted (TRH C10-C36)		SE69125-54	12/05/2009 || [N/T]
Date Analysed (TRH C10-C36)		SE69125-54	12/05/2009 || [N/T]
TRH C_{10} - C_{14}	mg/kg	SE69125-54	<20 || [N/T]
TRH C_{15} - C_{28}	mg/kg	SE69125-54	<50 || [N/T]
TRH C_{29} - C_{36}	mg/kg	SE69125-54	<50 || [N/T]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted		SE69125-67	12/05/2009 || 12/05/2009
Date Analysed		SE69125-67	12/05/2009 || 12/05/2009
Naphthalene	mg/kg	SE69125-67	<0.10 || <0.10
2-Methylnaphthalene	mg/kg	SE69125-67	<0.10 || <0.10
1-Methylnaphthalene	mg/kg	SE69125-67	<0.10 || <0.10
Acenaphthylene	mg/kg	SE69125-67	<0.10 || <0.10
Acenaphthene	mg/kg	SE69125-67	<0.10 || <0.10
Fluorene	mg/kg	SE69125-67	<0.10 || <0.10
Phenanthrene	mg/kg	SE69125-67	<0.10 || <0.10
Anthracene	mg/kg	SE69125-67	<0.10 || <0.10
Fluoranthene	mg/kg	SE69125-67	<0.10 || <0.10
Pyrene	mg/kg	SE69125-67	<0.10 || <0.10

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QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Benzo[*a*]anthracene	mg/kg	SE69125-67	<0.10 || <0.10
Chrysene	mg/kg	SE69125-67	<0.10 || <0.10
Benzo[*b,k*]fluoranthene	mg/kg	SE69125-67	<0.20 || <0.20
Benzo[*a*]pyrene	mg/kg	SE69125-67	<0.05 || <0.05
Indeno[*123-cd*]pyrene	mg/kg	SE69125-67	<0.10 || <0.10
Dibenzo[*ah*]anthracene	mg/kg	SE69125-67	<0.10 || <0.10
Benzo[*ghi*]perylene	mg/kg	SE69125-67	<0.10 || <0.10
Total PAHs (sum)	mg/kg	SE69125-67	<1.7 || <1.7
Nitrobenzene-d5	%	SE69125-67	107 || 103 || RPD: 4
2-Fluorobiphenyl	%	SE69125-67	99 || 96 || RPD: 3
p -Terphenyl-*d14*	%	SE69125-67	97 || 94 || RPD: 3

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE69125-46	11/05/2009 || 11/05/2009
Date Analysed (Metals)		SE69125-46	11/05/2009 || 11/05/2009
Arsenic	mg/kg	SE69125-46	4 || 4 || RPD: 0
Cadmium	mg/kg	SE69125-46	<0.3 || <0.3
Chromium	mg/kg	SE69125-46	16 || 15 || RPD: 6
Copper	mg/kg	SE69125-46	15 || 14 || RPD: 7
Lead	mg/kg	SE69125-46	14 || 13 || RPD: 7
Nickel	mg/kg	SE69125-46	15 || 15 || RPD: 0
Zinc	mg/kg	SE69125-46	52 || 50 || RPD: 4

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QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE69125-46	11/05/2009 || 11/05/2009
Date Analysed (Mercury)		SE69125-46	11/05/2009 || 11/05/2009
Mercury	mg/kg	SE69125-46	0.05 || <0.05

QUALITY CONTROL TRH in soil with..C6-C9 by P/T	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (TRH C6-C9 PT)		SE69125-1	11/05/2009 || [N/T]
Date Analysed (TRH C6-C9 PT)		SE69125-1	12/05/2009 || [N/T]
TRH C_6 - C_9 P&T	mg/kg	SE69125-1	<20 || [N/T]
Date Extracted (TRH C10-C36)		SE69125-1	12/05/2009 || 12/05/2009
Date Analysed (TRH C10-C36)		SE69125-1	12/05/2009 || 12/05/2009
TRH C_{10} - C_{14}	mg/kg	SE69125-1	<20 || <20
TRH C_{15} - C_{28}	mg/kg	SE69125-1	<50 || <50
TRH C_{29} - C_{36}	mg/kg	SE69125-1	<50 || <50

QUALITY CONTROL TRH in soil with..C6-C9 by P/T	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (TRH C6-C9 PT)		SE69125-35	11/05/2009 || [N/T]
Date Analysed (TRH C6-C9 PT)		SE69125-35	12/05/2009 || [N/T]
TRH C_6 - C_9 P&T	mg/kg	SE69125-35	<20 || [N/T]
Date Extracted (TRH C10-C36)		SE69125-35	12/05/2009 || 12/05/2009
Date Analysed (TRH C10-C36)		SE69125-35	12/05/2009 || 12/05/2009
TRH C_{10} - C_{14}	mg/kg	SE69125-35	150 || 130 || RPD: 14
TRH C_{15} - C_{28}	mg/kg	SE69125-35	130 || 110 || RPD: 17
TRH C_{29} - C_{36}	mg/kg	SE69125-35	130 || 150 || RPD: 14

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Result Codes

[INS]	:	Insufficient Sample for this test	[RPD]	:	Relative Percentage Difference
[NR]	:	Not Requested	*	:	Not part of NATA Accreditation
[NT]	:	Not tested	[N/A]	:	Not Applicable

Report Comments

Sampled by the client

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.

No respirable fibres detected using trace analysis technique.
Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.
Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced: 11/05/09
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)

Quality Control Protocol

Method Blank: An analyte free matrix to which all reagents are added in the same volume or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. A method blank is prepared every 20 samples.
Duplicate: A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.
Surrogate Spike: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are added to samples before extraction to monitor extraction efficiency and percent recovery in each sample.
Internal Standard: Added to all samples requiring analysis for organics (where relevant) or metals by ICP after the extraction/digestion process; the compounds/elements serve to give a standard of retention time and/or response, which is invariant from run-to-run with the instruments.
Laboratory Control Sample: A known matrix spiked with compound(s) representative of the target analytes. It is used to document laboratory performance. When the results of the matrix spike analysis indicates a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.
Matrix Spike: An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Quality Acceptance Criteria

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

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CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd Newcastle
Lot 101, 19 Warabrook Boulevard
Warabrook
New South Wales 2304
Site: ENVIWARA00401AA

Order Number:
Date Received: May 11, 2009
Date Sampled: May 11, 2009
Date Reported: May 15, 2009
Contact: Emma Coleman

Methods

- USEPA 8082 Polychlorinated Biphenyls
- USEPA 8081A Organochlorine Pesticides
- USEPA 8270C Polycyclic Aromatic Hydrocarbons
- USEPA 8260B - MGT 350A Monocyclic Aromatic Hydrocarbons
- TRH C6-C36 - MGT 100A
- USEPA 6010B Heavy Metals & USEPA 7470/71 Mercury
- Method 102 - ANZECC - % Moisture

Comments

Notes

Authorised

Michael Wright
Laboratory Manager
NATA Signatory

Onur Mehmet
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Tammy Lakeland
Chief Inorganic Chemist

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited
Laboratory Number 1261
The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement. This document shall not be reproduced, except in full.

Environmental Laboratory Industry Group
Member

Environmental Consulting Pty. Ltd.

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GLOSSARY OF TERMS

UNITS

mg/kg	milligrams per Kilogram	**mg/l**	milligrams per litre
ug/l	micrograms per litre	**ppm**	Parts per million
ppb	Parts per billion	**%**	Percentage
org/100ml	Organisms per 100 millilitres	**NTU**	Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

RPD Duplicates	Results <10 times the LOR : No Limit Results between 10-20 times LOR : RPD must lie between 0-50% Results >20 times LOR : RPD must lie between 0-20%
LCS Recoveries	Recoveries must lie between 70-130% - Phenols 40-150%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 40-150%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 40-150%

GENERAL COMMENTS

1. All results in this report supersede any previously corresponded results.
2. All soil results are reported on a dry basis.
3. Samples are analysed on an as received basis.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR this is due to either Matrix Interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Orgaonchlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
7. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
8. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
9. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

REPORT SPECIFIC NOTES

COMMENTS:

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Coffey Environments Pty Ltd Newcastle Lot 101, 19 Warabrook Boulevard Warabrook New South Wales 2304	Client Sample ID		QC1A
	Lab Number		M09-MY03057
	Matrix		Soil
	Sample Date		May 11, 2009
Analysis Type	**LOR**	**Units**	
Total Recoverable Hydrocarbons			
TRH C6-C9 Fraction by GC	20	mg/kg	< 20
TRH C10-C14 Fraction by GC	50	mg/kg	< 50
TRH C15-C28 Fraction by GC	100	mg/kg	< 100
TRH C29-C36 Fraction by GC	100	mg/kg	< 100
Monocyclic Aromatic Hydrocarbons			
Benzene	0.05	mg/kg	< 0.05
Toluene	0.05	mg/kg	< 0.05
Ethylbenzene	0.05	mg/kg	< 0.05
Xylenes(ortho.meta and para)	0.05	mg/kg	< 0.05
Fluorobenzene (surr.)	1	%	85
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.1	mg/kg	< 0.1
Acenaphthylene	0.1	mg/kg	< 0.1
Anthracene	0.1	mg/kg	< 0.1
Benz(a)anthracene	0.1	mg/kg	< 0.1
Benzo(a)pyrene	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	0.1	mg/kg	< 0.1
Benzo(g.h.i)perylene	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	0.1	mg/kg	< 0.1
Chrysene	0.1	mg/kg	< 0.1
Dibenz(a.h)anthracene	0.1	mg/kg	< 0.1
Fluoranthene	0.1	mg/kg	< 0.1
Fluorene	0.1	mg/kg	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	< 0.1
Naphthalene	0.1	mg/kg	< 0.1
Phenanthrene	0.1	mg/kg	< 0.1
Pyrene	0.1	mg/kg	< 0.1
Total PAH	0.1	mg/kg	< 0.1
Terphenyl-d14 (surr.)	1	%	106
2-Fluorobiphenyl (surr.)	1	%	119

COMMENTS:

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Coffey Environments Pty Ltd Newcastle Lot 101, 19 Warabrook Boulevard Warabrook New South Wales 2304	Client Sample ID		QC1A
	Lab Number		M09-MY03057
	Matrix		Soil
	Sample Date		May 11, 2009
Analysis Type	**LOR**	**Units**	
Organochlorine Pesticides			
4.4'-DDD	0.05	mg/kg	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
Chlordane	0.1	mg/kg	< 0.1
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxophene	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	94
Tetrachloro-m-xylene (surr.)	1	%	133
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1

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Coffey Environments Pty Ltd Newcastle Lot 101, 19 Warabrook Boulevard Warabrook New South Wales 2304	Client Sample ID		QC1A
	Lab Number		M09-MY03057
	Matrix		Soil
	Sample Date		May 11, 2009
Analysis Type	**LOR**	**Units**	
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1
Total PCB	1	mg/kg	< 1
Dibutylchlorendate (surr.)	1	%	94
Tetrachloro-m-xylene (surr.)	1	%	133
% Moisture	0.1	%	5.5
Heavy Metals			
Arsenic	2.0	mg/kg	6.9
Cadmium	0.5	mg/kg	< 0.5
Chromium	5	mg/kg	24
Copper	5	mg/kg	20
Lead	5	mg/kg	12
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	21
Zinc	5	mg/kg	56

COMMENTS:

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Coffey Environments Pty Ltd Newcastle Lot 101, 19 Warabrook Boulevard Warabrook New South Wales 2304	Client Sample ID	QC1A	QC1A	RPD	SPIKE	LCS	Method blank
	Lab Number	09-MY03057	09-MY03057	09-MY03057	09-MY03057	Batch	Batch
	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009
Analysis Type	Units			% RPD	% Recovery	% Recovery	mg/kg
Total Recoverable Hydrocarbons		Batch	Batch	Batch	Batch		
TRH C6-C9 Fraction by GC		-	-	9.0	92	79	< 20
TRH C10-C14 Fraction by GC		-	-	< 1	99	99	< 50
TRH C15-C28 Fraction by GC		-	-	< 1	-	-	< 100
TRH C29-C36 Fraction by GC		-	-	< 1	-	-	< 100
Monocyclic Aromatic Hydrocarbons		Batch	Batch	Batch	Batch		
Benzene		-	-	13	75	76	< 0.05
Toluene		-	-	3.0	78	83	< 0.05
Ethylbenzene		-	-	4.0	83	79	< 0.05
Xylenes(ortho.meta and para)		-	-	2.0	81	75	< 0.05
Polycyclic Aromatic Hydrocarbons		Batch	Batch	Batch	Batch		
Acenaphthene		-	-	< 1	101	78	< 0.1
Acenaphthylene		-	-	< 1	104	85	< 0.1
Anthracene		-	-	< 1	110	72	< 0.1
Benz(a)anthracene		-	-	< 1	103	79	< 0.1
Benzo(a)pyrene		-	-	< 1	100	81	< 0.1
Benzo(b)fluoranthene		-	-	< 1	97	80	< 0.1
Benzo(g.h.i)perylene		-	-	< 1	102	82	< 0.1
Benzo(k)fluoranthene		-	-	< 1	86	76	< 0.1
Chrysene		-	-	< 1	81	78	< 0.1
Dibenz(a.h)anthracene		-	-	< 1	78	88	< 0.1
Fluoranthene		-	-	< 1	75	77	< 0.1
Fluorene		-	-	< 1	113	80	< 0.1
Indeno(1.2.3-cd)pyrene		-	-	< 1	79	85	< 0.1
Naphthalene		-	-	< 1	88	71	< 0.1
Phenanthrene		-	-	< 1	91	82	< 0.1
Pyrene		-	-	< 1	85	76	< 0.1
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDD		-	-	< 1	128	94	< 0.05

COMMENTS:

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Coffey Environments Pty Ltd Newcastle
Lot 101, 19 Warabrook Boulevard
Warabrook

New South Wales 2304

	Client Sample	QC1A	QC1A	RPD	SPIKE	LCS	Method blank
	Lab Number	09-MY03057	09-MY03057	09-MY03057	09-MY03057	Batch	Batch
	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDE		-	-	< 1	108	94	< 0.05
4.4'-DDT		-	-	< 1	98	75	< 0.05
a-BHC		-	-	< 1	118	82	< 0.05
Aldrin		-	-	< 1	115	91	< 0.05
b-BHC		-	-	< 1	105	82	< 0.05
Chlordane		-	-	< 1	71	-	< 0.1
d-BHC		-	-	< 1	117	75	< 0.05
Dieldrin		-	-	< 1	118	97	< 0.05
Endosulfan I		-	-	< 1	108	98	< 0.05
Endosulfan II		-	-	< 1	121	92	< 0.05
Endosulfan sulphate		-	-	< 1	112	101	< 0.05
Endrin		-	-	< 1	122	79	< 0.05
Endrin aldehyde		-	-	< 1	113	92	< 0.05
Endrin ketone		-	-	< 1	103	86	< 0.05
g-BHC (Lindane)		-	-	< 1	125	78	< 0.05
Heptachlor		-	-	< 1	116	91	< 0.05
Heptachlor epoxide		-	-	< 1	110	97	< 0.05
Hexachlorobenzene		-	-	< 1	128	85	< 0.05
Methoxychlor		-	-	< 1	95	77	< 0.05
Toxophene		-	-	< 1	-	-	< 0.1
Polychlorinated Biphenyls		Batch	Batch	Batch	Batch		
Aroclor-1016		-	-	< 1	-	-	< 0.1
Aroclor-1221		-	-	< 1	-	-	< 0.1
Aroclor-1232		-	-	< 1	-	-	< 0.1
Aroclor-1242		-	-	< 1	-	-	< 0.1
Aroclor-1248		-	-	< 1	-	-	< 0.1
Aroclor-1254		-	-	< 1	-	-	< 0.1
Aroclor-1260		-	-	< 1	105	96	< 0.1

COMMENTS:

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Coffey Environments Pty Ltd Newcastle
Lot 101, 19 Warabrook Boulevard
Warabrook

New South Wales 2304

Client Sample	QC1A	QC1A	RPD	SPIKE	LCS	Method blank
Lab Number	09-MY03057	09-MY03057	09-MY03057	09-MY03057	Batch	Batch
QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009	May 11, 2009
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Polychlorinated Biphenyls		Batch	Batch	Batch	Batch		
Total PCB		-	-	< 1	105	96	< 1
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		-	-	14	-	89	< 2
Cadmium		-	-	< 1	-	90	< 0.5
Chromium		-	-	5.4	-	96	< 5
Copper		-	-	< 1	75	90	< 5
Lead		-	-	< 1	-	91	< 5
Mercury		-	-	< 1	71	96	< 0.1
Nickel		-	-	20	-	91	< 5
Zinc		-	-	4.2	-	100	< 5

COMMENTS:

SGS

COFFEY ENVIRONMENTS PTY LTD
ATTN EMMA COLEMAN
LOT 101, 19 Warabrook Boulvard
2304 NSW
Australia

ANALYTICAL REPORT : IAC-09050507

Your reference:	SE69125A - Client ref ENVIWARA00401AA
Number of samples:	1
Date of receipt:	27-5-2009
Identification of the samples:	
IAC-09050507.001	SE69125A-60 - Client TP3(0.4-0.5m)

Analytical results:

[B] Determination of 2,3,7,8 substituted PCDF's and PCDD's
(HRGC/HRMS; ECO/AV/IAC/012)

[B] *The analyses marked with B are Belac ISO17025 accredited (N.005-TEST)*

Remarks:

Date extracted: 02/06/2009
Date analysed: 09/06/2009

ANTWERP, 10/06/2009

I.A.C.
A division of SGS Belgium NV

Belac ISO17025 (N.005-TEST)

Marc Van Ryckeghem
Division Manager

SGS

Determination of 2,3,7,8-substituted PCDFs and PCDDs.

Sample identification : IAC-09050507.001
Your reference: SE69125A-60 - Client TP3(0.4-0.5m)
Date sampled: 06/05/2009

Component	Concentration (ng/kg)	I-TEF	I-TEQ (ng/kg)
2,3,7,8-TCDF	< 0,77	0,1	< 0,077
2,3,7,8-TCDD	< 0,77	1	< 0,77
1,2,3,7,8-PeCDF	< 0,77	0,05	< 0,038
2,3,4,7,8-PeCDF	< 0,77	0,5	< 0,38
1,2,3,7,8-PeCDD	< 0,77	0,5	< 0,38
1,2,3,4,7,8-HxCDF	< 0,77	0,1	< 0,077
1,2,3,6,7,8-HxCDF	< 0,77	0,1	< 0,077
2,3,4,6,7,8-HxCDF	< 0,77	0,1	< 0,077
1,2,3,7,8,9-HxCDF	< 0,77	0,1	< 0,077
1,2,3,4,7,8-HxCDD	< 0,77	0,1	< 0,077
1,2,3,6,7,8-HxCDD	< 0,77	0,1	< 0,077
1,2,3,7,8,9-HxCDD	< 0,77	0,1	< 0,077
1,2,3,4,6,7,8-HpCDF	2,2	0,01	0,022
1,2,3,4,7,8,9-HpCDF	< 1,3	0,01	< 0,013
1,2,3,4,6,7,8-HpCDD	2,1	0,01	0,021
OCDF	< 2,6	0,001	< 0,0026
OCDD	24	0,001	0,024
Total			**0,067 - 2,3**

The TEQ values have been calculated using the toxicity equivalence factors according to J.A. van Zorge et al. (Chemosphere 19 (1989), 1881-1895).The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.
The RSD of the control sample is less than 10%.

SGS

Recovery standards - 2,3,7,8-substituted PCDFs & PCDDs.

Sample identification : IAC-09050507.001

Your reference: SE69125A-60 - Client TP3(0.4-0.5m)

Recovery extraction standards

Component	Recovery 13C extraction standards (%)
13C-2,3,7,8-TCDF	74,5
13C-2,3,7,8-TCDD	61,3
13C-1,2,3,7,8-PeCDF	78,2
13C-2,3,4,7,8-PeCDF	80,6
13C-1,2,3,7,8-PeCDD	88,6
13C-1,2,3,4,7,8-HxCDF	97,9
13C-1,2,3,6,7,8-HxCDF	83,9
13C-2,3,4,6,7,8-HxCDF	97,9
13C-1,2,3,7,8,9-HxCDF	97,9
13C-1,2,3,4,7,8-HxCDD	107
13C-1,2,3,6,7,8-HxCDD	98,1
13C-1,2,3,4,6,7,8-HpCDF	98,3
13C-1,2,3,4,7,8,9-HpCDF	83,1
13C-1,2,3,4,6,7,8-HpCDD	125
13C-OCDF	96,1
13C-OCDD	102

Appendix C
Data Validation Report

DATA COMPLETENESS

Field Considerations

	Yes / No	Comment
Were all critical locations sampled?	Yes	
Were all critical depths sampled?	Yes	
Were the SOPs appropriate and complied with?	Yes	
Was the sampler adequately experienced?	Yes	
Was the field documentation complete?	Yes	
Is a copy of the signed chain of custody form for each batch of samples included?	Yes	

Laboratory Considerations

	Yes / No	Comment
Were all critical samples analysed according to sampling plan?	Yes	
Were analytes analysed as per sampling plan?	Yes	
Were the laboratory methods appropriate?	Yes	
Were the laboratory methods adopted NATA endorsed?	Yes	
Was the NATA Seal on the laboratory reports?	Yes	
Were the laboratory reports signed by an authorised person?	Yes	
Were the laboratory PQLs below the criteria?	Yes	

Was sample documentation complete?	Yes	
Were sample holding times complied with?	Yes	

COMPLETENESS CONCLUSION

	Yes / No	Comment
Was data adequately complete?	Yes	

DATA COMPARABILITY

Field considerations

	Yes / No	Comment
Was there more than one sampling round?	No	
Were the same sampling methodology and SOPs used for all sampling?	Yes	
Was all sampling undertaken by the same sampler?	Yes	
Were sample containers, preservation, filtering the same?	Yes	
Could climatic conditions (temperature, rainfall, wind) have influenced data comparability?	No	It is not considered that climatic conditions would affect the data comparability.
Were the same types of samples collected (filtered, size fractions etc) for each media?	Yes	

Laboratory Considerations

	Yes / No	Comment
Were the same analytical methods used (including clean up)?	Yes	
Were the PQLs the same?	Yes	
Were the same laboratories used?	No	Primary, duplicate and wash blank samples were analysed by SGS Australia Pty Ltd. The triplicate sample was analysed by MGT Pty Ltd
Were the units reported the same?	Yes	

COMPARABILITY CONCLUSION

	Yes / No	Comment
Was data adequately comparable?	Yes	

DATA REPRESENTATIVENESS

Field Considerations

	Yes / No	Comment
Was appropriate media sampled?	Yes	
Was media identified sampled?	Yes	
Were the samples properly and adequately preserved? This includes keeping the samples chilled, where applicable.	Yes	
Were the samples in proper custody between the field and reaching the laboratory?	Yes	
Were the samples received by the laboratory in good condition?	Yes	

Laboratory Considerations

	Yes / No	Comment
Were all samples analysed according to SAQP?	NA	There was no SAQP for this assessment.

REPRESENTATIVENESS CONCLUSION

	Yes / No	Comment
Was data adequately representative?	Yes	

DATA PRECISION AND ACCURACY

Field considerations

	Yes / No	Comment
Were the SOPs appropriate and complied with?	Yes	Based on available Coffey Environments Standard Operating Procedures.

Laboratory Considerations for Soil

	Metals	TPH	BTEX	PAH	OCP	PCB	Asbestos	VHCs	Phenol
Primary	27	22	22	23	10	4	9	2	2
Field QA/QC									
Intralab Dup	3, 11%	2, 9%	2, 9%	3, 13%	3,30%	2, 50%	0	0	0
Interlab Dup	1, 4%	1, 4%	1,47%	1, 4%	1, 10%	1, 25%	0	0	0
Trip Spike	NA	NA	0	NA	NA	NA	NA	NA	NA
Trip Blank	NA	NA	2	NA	NA	NA	NA	NA	NA
Wash Blanks	1	1	1	1	1	1	0	0	0
LAB QA/QC									
Lab Blanks	2	3	2	2	2	2	0	1	1
Lab Dups	3	4	2	3	1	1	0	0	0
Matrix Spikes	3	2	1	2	1	1	0	0	1
Lab Control	0	1	0	1	1	1	0	1	0
Surrogate	0	0	1	3	1	1	0	4	0

	Yes / No	Comment
Field QA/QC		
Were an adequate number of field duplicates analysed?	Yes	Refer to above table. Soil duplicate samples generally exceeded the requirement of 1 duplicate per 10 primary samples. Triplicate samples were generally analysed at 1 per 20 samples
Were the RPDs of the field duplicates within control limits?	No	Four RPDs exceeded the control limit of 50%. These are discussed in the report in Section 8.1.3.
Were an adequate number of trip blanks analysed?	Yes	
Were the trip blanks free of contaminants	Yes	
Were an adequate number of trip spikes analysed?	No	No trip spikes were analysed. The laboratory mistakenly sent a trip blank labelled as a trip spike. Given the low concentrations of volatiles recorded it is not considered that the lack of a trip spike significantly affects the data precision and accuracy.
Were the trip spikes recoveries within control limits?	NA	
Were an adequate number of wash blanks analysed?	Yes	One wash blank was analysed for each day of sampling.
Were the wash blanks free of contaminants?	No	Zinc was detected in both wash blanks. The zinc may have been present within the wash blank water. Taking into account the concentrations of zinc in the samples, it is considered that its detection in the wash blank does not affect the usability of the data.
Lab QA/QC		
Were an adequate number of laboratory blank samples analysed?	Yes	
Were the blanks free of contaminants?	Yes	

Were an adequate number of laboratory matrix spikes and laboratory control samples analysed?	Yes	
Were an adequate number of surrogate spike samples analysed?	Yes	
Were the spikes recoveries within control limits?	Yes	
Were an adequate number of laboratory duplicates analysed?	Yes	
Were the laboratory duplicate RPDs within control limits?	Yes	

PRECISION AND ACCURACY CONCLUSION

	Yes / No	Comment
Was soil data adequately precise?	Yes	
Was soil data adequately accurate?	Yes	
Was groundwater data adequately precise?	NA	
Was groundwater data adequately accurate?	NA	

Table D1: Laboratory Methodologies (SGS)

Analysis	Method Based On	NATA Registered
TPH C6-C9/BTEX	Based on USEPA 8260	Yes
TPH C10-C36	Based on USEPA 8015B	Yes
PAH	Based on USEPA 8270	Yes
Metals	Based on USEPA 200.7 (soil) / USEPA 6020A (water)	Yes
OCP	Based on USEPA 8080/8140	Yes
PCB	Based on USEPA 8080	Yes
Phenols	Based on APHA 21st ed 5530B and 5530D	Yes
Asbestos	In-house method AN602	Yes
VHCs	Based on USEPA 5030B and 8260B	Yes

Table D2: Holding Times (SGS)

Soil Analysis	Holding Time	Maximum Time Between Sampling and Extraction	Holding Times Met
TPH C6-C9/BTEX	14 days	6 days	Yes
TPH C10-C36	14 days	7 days	Yes
PAH	14 days	7 days	Yes
Metals	6 months	6 days	Yes
OCP	14 days	7 days	Yes
PCB	14 days	7 days	Yes
Asbestos	NA	8 days	NA
VHCs	14 days	6 days	Yes
Phenols	14 days	6 days	Yes