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Integrated Practical Solutions

Report on Updated Contamination Assessment

Jumping Creek Estate Development
Ellerton Drive, Queanbeyan

Prepared for
Peet Limited

Project 88224.06
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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
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Reviewer	Dean Woods	10 September 2020

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Appendices

Report on Updated Contamination Assessment
Jumping Creek Estate Development
Ellerton Drive, Queanbeyan

1. Introduction

This report presents the results of an updated contamination assessment undertaken for the current development area of the Proposed Jumping Creek Estate at Ellerton Drive, Queanbeyan. The investigation was commissioned by Mitchell Alexander of Peet Limited and was undertaken in accordance with Douglas Partners Pty Ltd (DP's) proposal CAN200076 dated 6 March 2020.

DP understands that the site is intended for a subdivision to enable development of residential properties. DP is aware that several phases of environmental investigation works have been completed by other Consultants and that the site was subject to a non-statutory audit, it is understood that the most recent intrusive environmental investigation works, including a site audit report prepared by the Site Auditor, date from 2010.

In 2019, SPACELAB Studio Pty Ltd (Spacelab) on behalf of PEET submitted a development application (DA) to Queanbeyan Palerang Regional Council (QPRC), which included an Update Contamination Assessment by DP (DP report ref 88224.03.R.001.Rev1, dated 22 March 2019). Following review of the DA submission documents, QPRC requested additional information in order to make a determination for the DA. The request included a request for further information regarding the contamination assessment of the site. This revised and updated report aims to fulfil QPRC's requirements to allow a determination to be made regarding the DA.

The objectives of the updated site contamination assessment include:

- Review previous environmental reports for the site provided to DP and provide comment on the adequacy and status of works undertaken to date;
- Research the historical use of the site and report on any matters that could prevent the site from being developed with reference to soil and groundwater contamination;
- Inspect the site to assess the current site condition with reference to site contamination;
- Undertake intrusive investigation of additional identified areas of environmental concern (AECs) at the site not previously assessed; and
- Advise on the potential of contamination and the need, if any, for additional investigation or on-going site management.

This report must be read in conjunction with the notes *About this Report* which are included in Appendix A and other explanatory notes, and the report should be kept in its entirety without separation of individual pages or sections.

2. Scope of Works

The following scope of works was undertaken to meet the project objectives:

- Review of existing reports made available to DP;
- A search through the Contaminated Land Register for notices issued under the CLM Act;
- A review of available historical aerial photography;
- A search of the NSW Office of Water’s registered groundwater database;
- A site inspection visit was undertaken to confirm the current state of the site. During the site inspection, areas of environmental concern previously identified were inspected and additional areas of environmental concern were recorded;
- Limited subsurface investigation of any additional AECs with sampling and laboratory testing for the contaminants of concern as outlined Section 12; and
- Preparation of this site contamination assessment report, detailing the review of existing report, results of the site inspection visit, results of laboratory analysis and assessing the need for further field-based environmental investigations or remediation works.

3. Site Identification and Description

3.1 Site Identification

Site information is summarised in Table 1 below.

Table 1: Site Identification Details

<table>
<tr><th colspan="2">Item</th><th>Details</th></tr>
<tr><td colspan="2">Site Owner</td><td>PEET Limited</td></tr>
<tr><td colspan="2">Site Address</td><td>30 Lonergan Drive, Greenleigh, NSW 2620</td></tr>
<tr><td colspan="2">Current land use</td><td>Open land</td></tr>
<tr><td colspan="2">Registered Lot and Plan</td><td>Lot1, DP1249543</td></tr>
<tr><td colspan="2">Current Zoning</td><td>E2: Environmental Conservation
E4: Environmental Living
RE1: Public Recreation

(extract of Queanbeyan-Palerang Regional Council Local Environment Plan 2012 is presented in Appendix C.</td></tr>
<tr><td colspan="2">Council</td><td>Queanbeyan-Palerang Regional Council</td></tr>
<tr><td colspan="2">Approximate Site Area</td><td>95 ha</td></tr>
<tr><td colspan="2">Proposed future land-use</td><td>Residential</td></tr>
<tr><td>Surrounding Land Use</td><td>North:</td><td>Ellerton Drive Extension construction site with low density residential properties beyond</td></tr>
</table>

Item		Details
	South:	Undeveloped woodland
	East:	Undeveloped woodland
	West:	Queanbeyan River with low density residential and undeveloped woodland beyond

3.2 Site Layout and Description

The overall site comprises an irregularly shaped, but roughly square parcel of land covering approximately 95 ha. The site measures approximately 1.1 km and 1.2 km in maximum east-west and north-south dimensions. The site is bounded to the west by the Queanbeyan River, to the north by the Ellerton Drive Extension construction works and to the east and south by undeveloped woodland.

The site lies within an enclosed valley within the Queanbeyan River corridor and is moderately to highly undulating and includes ridgelines and steep sided valleys. Valley Creek flows through the site from south-east to the north-west before meandering through a narrow gorge to join the Queanbeyan River. A high ridge line is present in the east of the site and other ridges are present in the north-west, south-east and south- west.

The elevation of the site ranges from approximately 580 m Australian Height Datum (AHD) in the west of the site to 690 m AHD in the north-east corner of the site.

The site is partially cleared of trees and moderately to heavily grassed with a variable tree and weed density. Weeds, including blackberry and bramble are generally located within valley or gully areas and were dense. Extensive rock outcropping and/or cobbles/boulders sub cropping were noted across most of the site. Uncontrolled filling was limited to existing access tracks and previous site disturbance (including motor bike mounds that appeared to be mounds created from site soils). Several areas were noted to contain scrap metal and dumped car bodies.

The site location and currently layout is presented in Drawing 1, Appendix B.

4. Proposed Development

The proposed development at the site will involve subdividing the site to allow for low density residential development. The development will include the installation of roads and services, public open space areas and the creation of a stormwater retention pond in the lower slopes of the Valley Creek valley.

The proposed indicated site layout for the current development area is presented in Drawing 2, Appendix B.

This report provides an updated contamination assessment for the current development area of the proposed Jumping Creek Estate at the site.

5. Soil Landscape, Regional Geology and Hydrogeology

5.1 Geology and Hydrogeology

Reference to the Canberra Geology Sheet indicates that the site is underlain by several rock units.

The north-eastern corner of the site is mapped as being underlain by the Pitman Formation of Ordovician age. The Pitman Formation typically comprises interbedded sandstone, siltstone shale and minor black shale.

The eastern part of the site is mapped as being underlain by a subgroup of the Colinton Volcanics and two subgroups of the Cappanana Formation both of late Silurian age. These rock subgroups typically comprise:

- dark green dacitic ignimbrite and minor volcaniclastic sediments;
- shale, siltstone and minor quartzite and tuff; and
- limestone.

The western part of the site is mapped as being underlain by 3 subgroups of the Colinton Volcanics of late Silurian age. These rock subgroups typically comprise:

- dark green dacitic ignimbrite and minor volcaniclastic sediments;
- tuffaceous shale; and
- limestone and dolomitic limestone.

Reference to the Hydrogeology of the Australian Capital Territory and Environs Map indicates that the site is located on fractured aquifers of late Silurian age. Based on the hydrogeology map, the yield of aquifers increases from the east to the west from less than 0.5 l/s to 0.5 – 1.0 l/s. Total dissolved solids (TDS) are mapped as increasing from the west to the east from between 500-1000 mg/l close to the Queanbeyan River to greater than 1000 mg/l further to the east.

Surface water was not observed during the site inspection with the exception of ponded water from recent rain fall. The site is traversed by numerous intermittently flowing watercourses and gully lines which run in variable directions, but ultimately, water flows are to the north and north-west towards Jumping Creek and the Queanbeyan River.

5.2 Soil Landscape

Reference to the Canberra Soil Landscape Sheet indicates the site is mapped as being underlain by the Burra soil group.

The Burra soil group is characterised by undulating to rolling low hills and alluvial fans on Silurian Volcanics of Canberra Lowlands, which are generally characterised by waning and gently to moderately inclined hill slopes, foot slopes and fans. Soils are shallow, well drained earthy sands on crests and upper slopes, and are moderately deep, moderately well drained red podzolic soils on mid slopes and most lower slopes. Moderately deep, moderately well drained yellow podzolic soils are present along minor drainage lines and on some lower slopes. The Landscape Sheet lists this soil group as characterised by its strong acidity and low water holding capacity, its low permeability, sheet erosion risk, run-on and localised shallow soil.

5.3 Groundwater Bore Search

A search of the groundwater bore database was conducted through the NSW Department of Primary Industries. Based on the database, there are 11 groundwater bores registered within a 1 kilometre radial search area of the boundary of the site (Table 2). Further information was available through the database for the bore as shown in Appendix C.

Table 2: Groundwater Bores Attribute Data

Groundwater Bore Number	Date	Approximate Distance to site (m)	Private/Public	Groundwater Usage	Depth to base (m)	Depth to standing water level (m)	Yield (L/s)
GW402778	02/10/2003	890 NE	Private	Domestic	36	19	3.37
GW402771	03/10/2003	890 NE	Private	Domestic	66	22	1.06
GW402842	30/11/2004	890 NE	Private	Domestic	60	24	2.25
GW416490	04/01/2012	890 NE	Private	Domestic, Irrigation	66	-	1.0
GW4400875	30/07/1997	890 NE	Private	Domestic	36.6	16.0	0.25
GW403165	13/07/2005	890 NE	Private	Stock, Domestic	78.00	29.0	3.25
GW401615	06/12/2000	600 E	Private	Domestic	73	41.0	0.2
GW416092	31/10/2007	600 E	Private	Stock, Domestic	102	32.0	0.63
GW416069	19/07/2004	440 N	Private	Domestic	113	74.0	-
GW402365	21/05/2003	220 NE	Private	Stock, Domestic	79	18.0	0.25
GW404162	23/05/2005	220 NE	Private	Domestic	100	22.00	4.5

Groundwater flow direction is inferred to be towards the west and would likely be connected to the Queanbeyan River.

6. Previous Environmental Works

6.1 Aboriginal Archaeological Assessment, New South Wales Archaeology Pty Ltd (2009)

New South Wales Archaeology Pty Ltd (NSWA) was commissioned by Canberra Investment Corporation Pty Ltd (CIC) to prepare an Aboriginal Archaeological Assessment (AAA) for the Jumping Creek site to support a rezoning application to Queanbeyan City Council (now QPRC). The AAA reviewed previous archaeological studies undertaken for the site as well as undertaking a field study of the site. The field study comprised a site inspection and recording of artefacts, but did not include intrusive investigation.

The AAA provided a summary of the history of both aboriginal and European occupation of the site and site and recorded both indigenous and non-indigenous archaeological features present.

The non-indigenous features present were mainly related to mining activity at the site and are summarised in Table 3 below and the locations of the features are presented on Drawing 3, Appendix B.

Table 3: Summary of non-indigenous archaeological features

Feature ID	Description	GPS Coordinates
JCH1	Shearing shed and sheep dip complex	E704742, N6083351
JCH2	Mine shaft	E705178, N6083390
JCH3	Limestone quarry	E705289, N6082752
JCH4	Brick Limekiln	E705221, N6082866
JCH5	Limestone quarries	E704733, N6083200 and E704696, N6083262
JCH6	Lime Kiln	E704736, N6083248
JCH7	Mine workings	E705028, N6082899
JCH8	Ore processing area	E704921, N6083072
JCH9	Miners' camp	E704918, N6083130
JCH10	Mine shafts	E704509, N6082662
JCH11	Domestic site	E704480, N6082728
JCH12	Building material dump	E704633, N6083356
JCH13	Mine diggings	E704415, N6082503

6.2 Remediation Action Plan, Sheep Dip Area (2009)

Coffey Environments Pty Ltd (Coffey) was commissioned by CIC to prepare a remediation action plan (RAP) for a former sheep dip area located in the north-western part of the site. It is noted that this area corresponds to JCH1 described in the AAA. The location of the former sheep dip is shown in Drawing 1, Appendix B. The objectives of the RAP included setting remediation goals, selecting the preferred remedial option, outlining procedures for the implementation of the remedial option and providing site validation requirements.

In preparing the RAP, Coffey reviewed previous reports undertaken by IT Environmental (Australia) Pty Ltd (IT, 1999) and Egis Consulting (2001). In a review of the IT Environmental report, Coffey identified that samples obtained in the vicinity of the sheep dip reported concentrations of arsenic greater than the adopted screening criteria in four samples. In addition, two samples in the vicinity of the sheep dip reported concentrations of organochlorine pesticides (OCPs) above the laboratory practical quantification limit (PQL) but below the adopted screening criteria. It is noted that the screening criteria applicable at the time of preparing the RAP were based on criteria in National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM), which was subsequently amended in 2013.

The RAP identified that arsenic, lead and OCPs were the main contaminants of concern and specified remediation criteria that should be applied. The remediation criteria were based on the ASC NEPM, 1999.

The RAP also identified demolition of the remaining sheep dip structures, excavation of soil and off-site disposal of contaminated material at a licensed landfill facility to be the preferred remedial option. The selection of excavation and disposal was based on the relatively small amount of soil expected to be disposed off-site, that material generated from demolition and excavation may not be suitable for on-site reuse and that the remediation strategy would have a low risk of failure, nor require ongoing maintenance or management.

The RAP detailed remediation scope of works including the depth and extent of excavation, waste management requirements and the validation required to determine the success of remediation. The validation works included collection of samples from the walls and base of excavations as well as sampling of surface soils across the sheep dip area in order to determine if additional soil requires off-site disposal. In addition, quality requirements were also detailed for material to be imported to site to backfill any excavations.

DP broadly agrees with the remediation option selected and the scope of validation samples. However, it is noted that the RAP was prepared in 2009 and the regulatory framework and guidance has subsequently been updated. DP therefore recommends that prior to commencing remediation works, the RAP should be updated to reflect the changes in legislation and guidance and an objective of a revised RAP would be to ensure that following remediation the site would be suitable for the proposed uses.

6.3 Stage 3 Contamination Assessment, Coffey (2010a)

Coffey was commissioned by CIC to conduct a Stage 3 Contamination Assessment of the proposed Jumping Creek Residential Estate. The objective of the assessment was to undertake supplementary contamination assessment of areas not investigated during previous assessments to inform remediation and management required to enable planning for the proposed residential estate. The Stage 3 Contamination Assessment is presented in Appendix C.

During the assessment, Coffey reviewed previous reports undertaken by IT Environmental (Australia) Pty Ltd (1999), Egis Consulting (2001) and Parsons Brinckerhoff (2007). The site history review indicated that the site had been used for a variety of potentially contaminating activities including the mining of metal ores, limestone quarrying and associated brick limekiln, possible on-site processing of mineral ores and pastoral activities including one sheep dip complex.

Coffey reported that use of the site dated back to the 1840s and that mining activities (mining for lead, copper and zinc) were believed to have occurred between the 1850s and early 1900s. In order to manage the size of the site from a contamination perspective, Coffey divided the site into five 'Domains of Interest' (DOI1 to DOI5), which were discrete areas defined by ridges and gullies of Jumping Creek. Coffey considered that contamination sources located within a particular DOI and separated by the site topography and geography were mutually exclusive from other areas of the site. Coffey considered that any contamination located in one DOI could not traverse to the other site DOIs and would only move down-gradient into Jumping Creek or its tributaries. The locations of the DOIs are presented in Figure 2 of Coffey (2010a), included in Appendix C.

The scope of work for the assessment included the development of a sampling analysis and quality plan (SAQP) to target the identified the areas of environmental concern, focusing particularly on the mining activities. In addition, sample locations were selected in areas of the site where residential blocks were proposed to be located and sediment samples, surface water samples and groundwater samples were proposed. It is noted that the SAQP was reviewed and approved by a site auditor as part of the assessment.

Following review of previous reports and site inspections, Coffey identified that three remnant mining sites were present at the site. These were named Mine Site 1, Mine Site 3 and Mine Site 4, and the locations of these areas are presented in Drawing 3, Appendix B. These areas correspond to items JCH2, JCH7 and JCH10, respectively, described in the AAA (NSWA, 2009).

It should be noted that Mine Site 3 is located in an area that is not currently proposed for development, however, at the time of the Coffey investigation, it was within an area proposed for residential development. In addition, a possible mineral processing area was located to the north-west of Mine Site 4 (corresponding to item JCH8 described in the AAA). Mine sites 1 and 3 were described to comprise single mine shafts and associated stockpiles. Mine Site 4 was described as comprising an area of open cut pits, several shallow trench excavations and an open adit. The mineral processing area was described as containing the remnants of several structures, including several water troughs, open drains and drainage sump areas. Reference was made to two additional mine sites previously encountered by IT Environmental, however, at the time of investigation, Coffey was unable to locate these mine sites.

Sampling targeted the above areas associated with mining activities and the kiln area. In addition, systematic sampling was undertaken in areas of the site that were, at the time of the assessment, proposed to be located in residential and open space areas. Sediment samples were also obtained from various locations within creeks present across the site. Soil sampling was not undertaken in the area of the sheep dip as part of the assessment by Coffey as it is understood that sampling of that area was undertaken by IT Environmental.

The assessment also included the installation and sampling of eight groundwater monitoring wells, the wells were installed in the vicinity of the sheep dip, the possible mineral processing area and Mine Sites 3 and 4. Three surface water samples were also collected from creeks where surface water was present.

The locations of samples obtained by Coffey are presented in Figures 3 to 7 in Coffey, 2010a, presented in Appendix C.

Laboratory results from soil samples submitted for analysis were compared against Health-based soil investigation levels (HILs) and ecological investigation levels (EILs) published in the National Environment Protection (Assessment of Site Contamination) Measure 1999[1]. HILs for residential land use with garden/accessible soil and EILs for urban land use setting were used to screen the results. Results from groundwater samples were compared against values published in the National Water Quality Management Strategy.

The results of the laboratory analysis indicated that concentrations of metals in soil samples were detected above the laboratory practical quantification limit (PQL).

Areas of elevated metal concentrations within soil and rocks were identified within Mine Sites 3 and 4.

At Mine Site 3, the range of reported concentrations for selected metals was:

- Arsenic – 22 mg/kg to 2,900 mg/kg;
- Cadmium – <PQL to 47 mg/kg;
- Copper – 1.6 mg/kg to 260 mg/kg;
- Lead – 3 mg/kg to 5,200 mg/kg; and
- Zinc – 100 mg/kg to 4,500 mg/kg.

At Mine Site 4, the range of reported concentrations for selected metals was:

- Arsenic – 4 mg/kg to 200 mg/kg;
- Cadmium – <PQL to 350 mg/kg;
- Copper – 4.1 mg/kg to 530 mg/kg;
- Lead – 15 mg/kg to 54,000 mg/kg; and
- Zinc – 48 mg/kg to 130,000 mg/kg.

In samples collected from areas of the site where the previously proposed development comprised residential or open space use, the range of reported concentrations for selected metals was:

- Arsenic – <PQL to 130 mg/kg;
- Cadmium – <PQL to 0.7 mg/kg;
- Copper – 1 mg/kg to 40 mg/kg;
- Lead – 3 mg/kg to 85 mg/kg; and
- Zinc – 17 mg/kg to 1,100 mg/kg.

It is noted that within the previously proposed residential areas, sample RE34 reported a concentration of arsenic greater than the applicable screening criteria (HIL-A). Additional samples (RE34a to RE34d) were collected by Coffey to delineate the extent of the arsenic hotspot. The results of the additional samples did not report arsenic concentrations greater than the applicable screening criteria(HIL-A or EIL). Coffey concluded that '*significant migration of contaminants via sediment transport in the watercourse has not occurred'.*

[1] The ASC NEPM was amended in May 2013 and revised HIL and EIL were published.

Whilst it was considered that the elevated concentrations were associated with natural mineralisation within local geological formations, Coffey considered that Mine Sites 3 and 4 were not suitable for standard residential or recreational use without remediation or management.

Subsequently, it was recommended that a capping layer with an appropriate management plan be implemented as a remediation strategy, however, even with the implementation of such a strategy, Coffey did not consider that Mine Sites 3 and 4 would be suitable for residential use. Areas of the site outside of Mine Sites 3 and 4 were considered to be suitable for either residential use or for parks and recreational open space.

Reported concentrations of arsenic and zinc in two sediment samples collected from creek channels on the site marginally exceeded the ecological screening criteria applicable at the time of the assessment. Further discussion of these results is present in Section 14.4.1.

Concentrations of metals in groundwater were reported to be elevated and for some monitoring wells were above the adopted criteria. The range of reported concentrations for selected metals was:

- Arsenic – <PQL to 0.038 mg/L;
- Cadmium – <PQL to 0.0001 mg/L;
- Copper – <PQL to 0.005 mg/L;
- Lead – <PQL to 0.2 mg/L; and
- Zinc – 0.003 mg/L to 0.016 mg/L.

Coffey concluded that groundwater across the site had elevated metal concentrations, with reported concentrations of several metals exceeding the applicable screening criteria for all samples except for monitoring well MW7. However, following evaluation of the Conceptual Site Model, Coffey considered that the risk of exposure of site users to elevated metal concentrations was low considering the depth to groundwater under the site.

In addition, reported concentrations of zinc in all three surface water samples and reported concentrations of copper in two surface water samples exceeded the applicable screening criteria. Coffey considered that the metal concentrations in surface water were representative of regional mineralisation rather than as a result of anthropogenic processes. Coffey also considered that the metal concentrations in surface water do not represent a risk to human health for the proposed site development.

It was recommended that a remediation action plan (RAP) and site environmental management plan be prepared for Mine Sites 3 and 4 to address the contamination identified at these areas of the site. Further, it was recommended that assessment and remediation of the Sheep Dip Area is to be completed as part of the validation works to be conducted as per the Remediation Action Plan (Coffey), 2009.

6.4 Remediation Action Plan, Jumping Creek (2010b)

Coffey was commissioned to prepare a separate RAP for areas of the site in which mining activities, or suspected mining activities have been undertaken. Coffey identified the extent of the contamination that required remediation based on the investigation discussed in the previous section. The extent of contamination where reported concentrations of contaminants of potential concern (CoPC) were above the applicable screening criteria were at Mine Site 3, Mine Site 4 and the mineral processing area.

At Mine Site 3, arsenic, cadmium, lead, copper and zinc were detected at concentrations exceeding the applicable screening criteria (HIL-A and EIL) and a conservative estimate of the affected area was estimated to be 3,500 m^2. At Mine Site 4, cadmium, lead and zinc were reported at concentrations exceeding the applicable screening criteria (HIL-A and EIL).. A conservative estimate of the size of the affected area was reported by Coffey to be 19,700 m^2.

Within the mineral processing area, reported concentrations of metals marginally exceeding screening criteria were observed at a small number of locations, however, these areas were not selected for remediation as analysis of the 95 % Upper Confidence Limit of the mean, indicated that concentrations of reported CoPC were below the criteria. However, two sump structures were located within the mineral processing area where reported concentrations of arsenic, cadmium and zinc exceeded the screening criteria and remediation of these soils was recommended along with demolition of the sumps.

Remediation options were assessed for the above areas, and Coffey considered that for Mine Site 3 and Mine Site 4, following removal of observed waste materials, consolidation of observed spoil heaps and affected soil within the remediation area and capping with a suitable barrier was identified as the preferred remediation option.

For the mineral processing area, it was recommended that demolition of the identified sump structures and excavation of the surrounding soil was the preferred remediation option. It was recommended that once excavated, soils could either be consolidated with soil in the Mine Site 4 Area or disposed off-site to a suitable waste disposal facility.

For Mine Site 3 and Mine Site 4 it was noted that a site environmental management plan (SEMP) would be required for ongoing management of these areas once remediation works were completed. For the mineral processing area, validation sampling was recommended. The validation works for the mineral processing area included collection of samples from the walls and base of excavations. In addition, quality requirements were also detailed for material to be imported to the site to backfill any excavations.

DP broadly agrees with the remediation option selected and the scope of validation samples. However, it is noted that the RAP was prepared in 2009 and the regulatory framework and guidance has subsequently been updated. DP therefore recommends that prior to commencing remediation works as described in the RAP, it should be updated to reflect the changes in legislation and guidance and an objective of a revised RAP would be to ensure that following remediation the site would be suitable for the proposed uses.

6.5 Site Audit Report, Environmental Strategies (2010a)

Environmental Strategies Pty Ltd (ES) were commissioned by Canberra Investment Corporation Pty Ltd to conduct a non-statutory site audit for the site. The Site Auditor (SA) was Mr Rod Harwood, ES reviewed several environmental reports for the site prepared by IT Environmental, Egis Consulting, Parsons Brinckerhoff and Coffey.

The objective of the audit was to determine whether the site conditions were protective of human health and the environment, and whether the site could be made suitable for the intended land use. ES reviewed previous consultants' reports with a view to commenting on the adequacy of the investigation and assessment, whether any data gaps remained and to enable the auditor to make comment on the suitability of the site for the intended use.

At the time of preparation of the SAR, the SA considered that the data collected by IT Environmental, PB and Coffey for the site had sufficient integrity to enable the SA to determine the contamination status of the site. With regards to assessment of the analytical results, the SA noted the following:

- *"Former Mine sites 3 and 4 are unsuitable, even after remediation for use as residential sites, and are to be capped and used for open space purposes, to be managed under a Site Environmental Management Plan (SEMP);*
- *The former sheep dip area is to be remediated and made suitable for residential use;*
- *Creek bed sediments show no evidence of contamination from former site activities;*
- *Surface waters at the site show no evidence of contamination resulting from former site activities;*
- *Groundwater beneath the site is contaminated from natural mineralisation in parts of the site, and in not considered by Coffey to be suitable for any on-site uses.*
- *Contamination requiring remediation appears to be limited to the sheep dip site and Mine sites 3 and 4.*
- *The Auditor also requires that Arsenic contamination at RE34 be addressed"*

The SA also noted that the areas of mining activity and the sheep dip site had been adequately assessed and the remainder of the site investigated to an extent to allow an effective remediation strategy to be prepared.

With regards to the remediation and validation activities, the SA considered that the sheep dip RAP was suitable for remediating the sheep dip area for residential use and that the RAP for the mining activity areas was suitable for remediation of those areas for open space use. Following remediation, the SA noted that the mining activity areas (Mine Site 3 and Mine Site 4) will need to be managed under a SEMP.

The SA also requested that the area of elevated arsenic found at RE34 should be remediated to allow the area to be suitable for residential use. However, DP notes that since the area in which the sample from RE34 was collected is no longer proposed for residential development, the SA may need to revisit this request. This is discussed further in Section 15.1.4.

6.6 Site Audit Statement, Environmental Strategies (2010b)

Mr Rod Harwood of ES prepared a Site Audit Statement (SAS) to accompany the SAR for the site, dated 25 August 2010. Under Part II, Section B of the site audit statement, it was stated that the site can be made suitable for the following uses:

- Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry;
- Day care centre, preschool, primary school;
- Secondary school; and
- Park, recreational open space, playing field.

The SAS required that the site must be remediated in accordance with the RAP prepared by Coffey. The following RAPs were referenced:

- Remediation Action Plan – Sheep Dip Area, Jumping Creek, Queanbeyan, NSW, Coffey Environments Australia Pty Ltd, dated 15 December 2009; and
- Remediation Action Plan – Jumping Creek, Queanbeyan, NSW, Coffey Environments Australia Pty Ltd, dated 4 June 2010.

The SAS was issued subject to compliance with the following conditions:

- Preparation of an Environment Management Plan for management of the Mine Site 3 and Mine Site 4 Areas following site remediation.

6.7 Site Environmental Management Plan – Mine Site Area 4, Coffey (2015)

Coffey was engaged by CIC to prepare a site environment management plan (SEMP) for the area of the site known as Mine Site Area 4. The objective of the SEMP was to facilitate effective management of the capping structure installed on the Mine Site 4 area and was written to support the draft planning proposal for the development and to enable the local Council to appreciate the remediation and post remediation management requirements for the Mine Site Area 4.

6.8 Cultural Heritage Assessment, Navin Officer (2019)

Navin Officer were commissioned by SpaceLab Studio Pty Ltd on behalf of PEET Jumping Creek Limited (PEET) to prepare an Archaeological and Cultural Heritage Assessment (ACHA) for the site to support the development application for the proposed residential development.

The ACHA reviewed previous archaeological studies and heritage listings for the site as well as undertaking a field study of the site. The field study comprised a site inspection and excavation of 162 test pits across the site. A review of heritage listings indicated that the brick limekiln and associated quarry identified as JCH3 and JCH4 by NSWA were heritage listed by NSW Office of Environment and Heritage.

With regards to the non-indigenous archaeology associated with mining and quarrying activities at the site, Navin Officer located the items JCH1 to JCH13 described by NSWA.

7. Site History Review

7.1 Regulatory Notice Search under the CLM and POEO Acts

A search on 18 August 2020 for Statutory Notices issued under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operation Act 1997* (POEO) available on the NSW Environment Protection Agency (EPA) website indicated that there have been no notices issued on the subject site.

The closest entry to the site on the List of NSW Contaminated Sites Notified to EPA was a Caltex Service Station located at 88 Macquoid Street, East Queanbeyan. The service station is located approximately 3.1 km north-west of the site. The contamination activity type was listed as “service station” and it indicated that regulation under the CLM Act was not required.

7.2 Historical Aerial Photography

Eight historical aerial photographs available from ACT Land and Property Information and two satellite images obtained from Google Earth were reviewed (refer to Aerial Photograph Plates D1 to D10 attached in Appendix D.

Table 4: Summary of Historical Aerial Photography Review

Aerial Photograph	On-site Conditions	Surrounding Area
1961 Photograph Run 18-0156	The site was mostly undeveloped with the land likely being used for grazing. Occasional tracks crossed the site. The site was mostly grassed with sporadic stands of trees The site was bounded to the west by the Queanbeyan River. Jumping Creek entered the site in the south-east corner of the site and meandered through the central portion of the site before joining the Queanbeyan River. Several smaller tributaries and gully lines joined Jumping creek at various points. At least three buildings were visible in the north western part of the site, one of which appeared to be a homestead. The location of the buildings appeared to be consistent with item JCH1 and is assumed that one of the buildings was a woolshed adjacent to the sheep-dip (NSWA, 2009). The remnants of what appeared to be quarrying activity were present in the south-eastern corner of the site. The location appeared to be consistent with items JCH3 and 4 (NSWA, 2009) Areas of bare ground were scattered across the site, including in the central portion of the site in the area where Coffey indicated Mine Site 4 to be located (Item JCH7, NSWA, 2009). Small, dark circular features were visible in the locations of JCH2 and JCH10 (NSWA, 2009) were just visible. The mining activity referred to by NSWA (2009) as JCH13 in the south-western corner of the site, was not visible.	The site was surrounding by undeveloped dry sclerophyll forest to the north, east and south. The Queanbeyan River was present immediately to the west of the site, beyond which was open grazing land.
1968 Photograph Run 11/9575	Largely unchanged from the previous photograph.	Largely unchanged from the previous photograph.

Aerial Photograph	On-site Conditions	Surrounding Area
	Areas of ground disturbance were visible to the south of the sheep dip (JCH1) and the area of ground disturbance at Mine Site 4 appeared larger. At least two small buildings were now visible to the north-west of Mine Site 4 (in the vicinity of the mineral/ore processing area, Item JCH8, NSWA, 2009). A track was visible leading from Mine Site 4 to Mine Site 3 and on to the mining activity area identified as JCH13 (NSWA, 2009). JCH13 was also visible and appeared to be a similar size and shape as detailed in NSWA (2009).	
1973 Photograph Run 73C13-85/86	Largely unchanged from the previous photograph. The large area of disturbed ground (Mine site 4) was visible in the central portion of the site to the south of Jumping Creek. At least three small buildings were now visible to the north-west of Mine Site 4 (in the vicinity of the mineral/ore processing area, Item JCH8, NSWA, 2009). One of the buildings in the north-eastern part of the site (Item JCH1) was no longer visible. Disturbed ground in the area of the lime quarries detailed as Item JCH 5 (NSAW 2009) were visible.	Largely unchanged from the previous photograph. A fire trail was present running along a ridge line to the east of the site, the fire trail entered the site in the north-east corner.
1978 Photograph Run 20-0196/0197	Largely unchanged from the previous photograph. Several tracks were visible crossing the site.	Largely unchanged from the previous photograph.
1984 Photograph Run 20-4942	Largely unchanged from the previous photograph. Additional tracks were now present across the site.	Largely unchanged from the previous photograph.

Aerial Photograph	On-site Conditions	Surrounding Area
	The buildings in the north-eastern part of the site (JCH 1) and to the north east of Mine Site 4 were no longer present.	
1987 Photograph Run 20-2215	Many more tracks were present across the site. A larger proportion of the site was covered with bush and shrubs.	Rural residential properties had been developed to the north of the site. Some residential properties had been developed to the west of the site.
1995 Photograph Run 20-210/211	Largely unchanged from the previous photograph.	Additional residential properties had been developed to the west of the site.
1998 Photograph Run 10-16	Largely unchanged from the previous photograph but a greater area of the site was covered with bushes and shrubs.	Largely unchanged from the previous photograph.
2004	Largely unchanged from the previous photograph.	Additional residential properties had been developed to the west of the site.
2018	Largely unchanged from the previous photograph.	The Ellerton Drive Extension works had commenced and formed the north-western boundary of the site.

7.3 Mining Records

Given the identification of historical mining activities at the site, a search of the NSW Planning, Industry & Environment Digital Imaging of Geological System (DIGS) database was undertaken.

The results of the search indicated that the site was located within the area covered by Exploration Licence 483. The licence was granted to Nova Nickel NL on 14 May 1971, however, the interest was sold to Tannenbar Exploration Limited who optioned an interest to Western Mining Corporation Limited. As part of the licence, progress reports provided a summary of exploration works undertaken. Progress report No. 3 covering a twelve month period to 14 May 1972, present results of stream sediment sampling undertaken. The report indicated approximately seven samples were obtained from creeks crossing the site. Results of the sampling were included in the report, and included values for copper, lead and zinc, however the value units were not included in the report.

In addition, the map showing the location of samples was based on the Canberra and Bungendore topographic maps, published in 1961. The map shows a ‘disused’ mine working to be located in the approximate area of Mine Site 4.

The mining report and extract from the topographical map is presented in Appendix C.

8. Site Inspection

The site was inspected by a suitably qualified DP environmental scientist on 14 August 2018 and again in July 2020 to observe the status of the site, observe the status of the previously identified areas of environmental concern and identify any visible indications of contamination on site and off site. The following observations were made:

General Site Observations

- The site was accessed on the northern boundary via a gateway accessed through the newly completed Ellerton Drive extension. Access was via an unsealed "four wheel drive" track;
- The site generally comprised undulating to steeply undulating undeveloped land which was moderately to heavily grassed;
- Surface cobbles, boulders and rock outcrops were observed across the entire site;
- Areas of the site were extensively covered with thick stands of weeds (mainly bramble and blackberry).;
- Semi-mature to mature trees were scattered across the site. The trees were a mixture of exotic and native species;
- An extensive network of tracks crossed the site. The tracks appeared to be used for unauthorised "four wheel driving" and motorbike riding; and
- Anthropogenic wastes were scattered across most areas of the site. Wastes ranged from small piles of building and demolition wastes, burned car bodies, small stockpiles of soil and general household wastes. A small stockpile located on the ridge-line in the north-west of the site was observed to contain pieces of potential asbestos containing material.

Sheep Dip Area, (Item JCH1, NSWA 2009)

The sheep dip area identified in previous reports was identified in the north western part of the site, adjacent to the main access track. The following observations were made:

- The remnant sheep dip structure comprised the concrete sheep dip trough with small concrete pads present at each end of the trough;
- The trough was approximately 10 m long and 0.5 m wide. The area was heavily overgrown with the trough obscured by trees and shrubs;
- Building and demolition rubble comprised corrugated metal sheet, brick and concrete boulders was scattered on the ground surface;
- Low wooden posts were observed driven into the ground;
- Several pieces of fibrous cement sheeting i.e. potentially asbestos containing materials were observed on the ground surface to the north of the sheep dip;
- The sheep dip was located on a broad ridge line dropping to the north and south. Extensive weeds (brambles and blackberry) were present on the north slope of the ridge; and
- A monitoring well was observed to the south-west of the sheep-dip. The location was consistent with that noted in the Coffey Stage 3 contamination assessment. The top of the PVC well casing was broken and no well cap was present.

Mine Site 1, (Item JCH2, NSWA 2009)

Mine Site 1 identified in previous reports was observed in the north-eastern part of the site adjacent to an access track. The following observations were made:

- The mine site comprised an open shaft with stockpiled spoil present on the eastern, southern and western sides of the shaft;
- A wire gate and hi-vis barrier mesh had been placed over the open shaft in an attempt to make the shaft safe;
- The depth of the shaft was measured to be greater than 6 m deep;
- Sparse grass cover was present in the vicinity of the shaft; and
- The mine shaft appeared in similar condition to that noted in the Coffey Stage 3 assessment report.

Mine Site 3, (Item JCH10, NSWA 2009)

Mine Site 3, identified in previous reports was observed in the south-western part of the site. It should be noted that this area is outside of the current development area, but still within the boundary of the site. It is understood that this mine site is within an area that will be used for public open space. The following observations were made:

- The mine site comprised an open shaft with stockpiled spoil present on the eastern, southern and western sides of the shaft. The shaft had not been in-filled;
- Trees and weeds were observed to be growing out of the shaft;
- The depth of the shaft was measured to be greater than 6 m deep;
- Weeds (bramble) were present on the stockpiled spoil;
- Three monitoring wells were observed, the locations of which were consistent with those detailed in the Coffey Stage 3 assessment report; and
- The shaft had not been in-filled and there was no evidence that any remediation works e.g. a capping layer, had been placed in the area.

Mine Site 4, (Item JCH7, NSWA 2009)

Mine Site 4, identified in previous reports, was observed in the central part of the site adjacent to an access track. The following observations were made:

- The mine site comprised a disturbed area of ground approximately 110 m long by 40 m wide and was located on a hillside that sloped down towards the north and east, on an inside bend of Jumping Creek;
- Two areas of open cut excavation and stockpiles of mining spoil were located in the north-western part of the area of disturbed ground;
- Several smaller stockpiles were located in the eastern part of the disturbed ground sloping towards the east along with two short open trenches. The stockpiles and trenches were overgrown with weeds and bushes;
- An adit was located in the eastern part of the disturbed ground on the lower eastern slope. The opening of the adit was overgrown, but it was observed that the adit opened into a passage,

however, it was not possible to ascertain the length of the adit. It should be noted that the entrance to the adit was similar in appearance to a photograph of a mine shaft presented in the Coffey Stage 3 assessment report; and

- Two monitoring wells were present in the eastern part of the disturbed ground area. The monitoring well locations appeared consistent with the locations of monitoring wells MW5 and MW6 identified in the Coffey Stage 3 assessment report.

<u>Mineral Processing Area/Stock Holding Area, (Item JCH8, NSWA 2009)</u>

The mineral processing area/stock holding area was identified to the north-west of Mine Site 4. The following observations were made:

- The area was heavily overgrown with trees, bushes and bramble present limiting access to the area and reducing areas of the area that could be directly observed;
- Evidence of former structures was observed including concrete slabs and low courses of brickwork. Several reinforced concrete troughs were observed throughout the area. The troughs were approximately 1.5 m long and 0.5 m wide. Building and demolition rubble was present throughout the area, including brick, metal, concrete and timber fragments. Timber posts driven into the ground were also present. Remnants of an above ground storage tank were also present, which appeared to be filled with waste materials. There was no labelling on the outside of the tank and it is unknown what the tank was formerly used to store;
- An open concrete drain was present leading to a concrete sump. It was not possible to closely observe the concrete lined drainage sump due to dense overgrowth;
- A monitoring well was present to the north east of the Mineral Process/Stock Holding Area. The monitoring well was located in a position consistent with the location of monitoring well MW7 identified in the Coffey Stage 3 assessment report; and
- The remaining features of the former structures appeared generally consistent with the photographs of the area provided in the Coffey Stage 3 assessment report.

<u>Kiln and Limestone Quarry (Items JCH3 and JCH4, NSWA 2009)</u>

The kiln and limestone quarry identified in previous reports was identified in the south-eastern corner of the site. The following observations were made:

- The remains of the kiln building were heavily overgrown with weeds and only parts of the structure could be observed;
- The parts of the structure observed appeared consistent with photographs presented in the Coffey Stage 3 assessment report;
- No evidence of any remediation works having been undertaken in the area was noted;
- The limestone quarry was noted in the south-east corner of the site on the lower eastern slopes of the Jumping Creek valley;
- The quarry was approximately 60 m long, 15 m wide and 5 m deep. A car body was present within the quarry area; and
- Large stockpiles of spoil were present to the west of the quarry.

Additional Mine and Limestone Quarry Site, (Item JCH5, NSWA 2009)

- A previously unidentified mine shaft and a small limestone quarry site (described as JCH5 in NSWA 2009) were present in the north- western part of the site, located to the south-west of the sheep dip area, on the north-eastern slope of a ridgeline;
- The small quarry site was approximately 20 m wide and 20 m long and was cut into the slope. Stockpiled spoil consisting of gravel to boulder sized fragments of rock was present to east of the quarry area; and
- The mine shaft was located to the south-west of the small quarry. The mouth of the shaft was heavily overgrown and measured approximately 3.5 m long and 2.5 m wide. Due to the overgrown vegetation, it was not possible to assess the depth of the shaft. Stockpiled spoil was present on the northern, eastern and southern sides of the shaft.

Photographs from the site inspection are presented in Appendix E.

9. Council Review of Development Application Documents

A previous version of this report (DP, 2019) was submitted to QPRC in support of the DA for the proposed development. Following review of the DA and accompanying documents QPRC requested additional information before determining the application.

With regards to the contamination assessment, QPRC requested that a single Detailed Site Investigation be provided for the entire site and include intrusive investigation of the additional mine site identified by DP (2019) and areas identified as JCH 5, JCH 6 and JCH13 in the Cultural Heritage Assessment prepared by NSWA (2009) and confirmed by Navin Officer (2019).

It is noted that Coffey (2010a) prepared a Stage 3 Contamination Assessment for the entire site, however, did not provide assessment of the above features requested by QPRC. Further, the ASC NEPM was amended in 2013 and introduced amended site assessment criteria which included a change in the generic land use settings. This revised report presents the data from Coffey (2010a) and the site assessment criteria published in the ASC NEPM (1999, amended 2013).

In addition, this revised report (sections 12 to 17) details the results of additional intrusive investigation undertaken at the site in order to assess the areas detailed during QPRC review of DA submission documents. A copy of the correspondence from QPRC requesting additional information is presented in Appendix F.

10. Potential for Contamination and Areas of Environmental Concern

Review of historical aerial photographs and previous environmental reports indicate that the site has been used for mining activities, limestone quarrying, possible on-site mineral ore processing and pastoral activities, including sheep dipping. The use of the site for these activities is understood to date from the 1840s when pastoral use of the site was undertaken with mining activities occurring between the 1850s and early 1900s. The above uses are considered to be potentially contaminating activities.

The following areas of environmental concern (AECs) associated with the above potentially contaminating activities were identified during previous works undertaken at the site and are presented on Drawing 4, Appendix B:

- AEC1: Mine Site 1 (located in DOI3);
- AEC2: Mine Site 3 (located in DOI1);
- AEC3: Mine Site 4 (located in DOI2);
- AEC4: Additional Mine Site (located in DOI5);
- AEC5: Items JCH 5, JCH 6 and JCH 13 (as described in NSWA 2009);
- AEC6: Former Possible Mineral Processing/Stockyard Area (located in DOI2);
- AEC7: Former Sheep Dip (located in DOI4); and
- AEC8: Former Kiln (located in DOI3)

Intrusive investigations undertaken by Coffey indicated reported concentrations of contaminants of concern from Mine Site 1 and the Former Kiln were below the adopted site assessment criteria and contaminants of concern did not present a risk to human health or environmental receptors. Therefore, AEC1 and AEC8 have not been considered further.

Concentrations of contaminants of concern in samples collected from Mine Site 3, Mine Site 4, and the possible mineral processing area were identified to exceed the adopted site criteria and are considered to be active AECs. The items described in NSWA (2009) and referred to in the QPRC request for further information and the Sheep Dip area are also considered to be active AECs.

Table 5 below outlines the justification behind the identification of AECs that DP considers are currently active.

Table 5: Summary of Areas of Environmental Concern

AEC Description	Justification	Contaminants of Concern*	Comments
AEC 2: Mine Site 3	Identified area of former mining activities	Arsenic, cadmium, lead, copper and zinc	Mine Site 3 is located in the south-west of the site. Following assessment of this area by Coffey (2010a), remediation of the area was recommended and subsequently a RAP was prepared (Coffey 2010b). Review of the RAP indicated that the preferred remediation option was consolidation of stockpiled material within the mining area, backfilling of open shafts and capping the area with imported material. DP considers that once remediation has been successfully completed and validated within the area, it is likely the area could be made suitable for use as public open space. It is further noted that at the time of the Coffey assessment and RAP, the area was proposed for residential use. Following revision of the proposed development, the area is proposed to be used for public open space.
AEC 3: Mine Site 4	Identified area of former mining activities, including open pits, stockpiled spoil and open adit	Lead, cadmium copper, zinc, arsenic	Mine Site 4 was identified by Coffey (2010a) as requiring remediation and a RAP was subsequently prepared by Coffey. The preferred remediation option was understood to be consolidation of stockpiled material within the mining area, backfilling of any open shafts and capping the area with imported material. A SEMP was prepared for the area by Coffey (2015) in order to detail the ongoing management required for the area following remediation. DP considers that once remediation has been successfully completed and validated within the area, it is likely the area could be made suitable for use as public open space.
AEC 4: Additional Identified Mine site	During the DP site inspection, an additional mine site comprising a shaft and stockpiled spoil was identified in the north-west of the site	Lead, copper, zinc, arsenic, chromium, cadmium, nickel, mercury, sulphate, acid generating potential, pH	During DP's site inspection, an additional mine site consisting of a shaft was encountered in the north-western part of the site, within the Stage 1 development area. Review of the Coffey Stage 3 Contamination area indicates that no intrusive investigation was undertaken in this area of the site. Therefore, DP considers that the potential for contamination in this area of the site has not been adequately characterised and that further assessment of the additional mine site is required.
AEC5: Mining, quarrying activity and limekiln	Review of the AAA (NSWA, 2009) and information from QPRC identified additional mining areas not previously assessed	Metals and polycyclic aromatic hydrocarbons	Review of the AAA indicated that items JCH5, JCH6 and JCH13 were possibly associated with either mining activity or limestone quarrying and processing (possible limekiln feature JCH6). Review of previous reports indicated that these areas have not previously been assessed. Therefore, DP considers that the potential for contamination in this area of the site has not been adequately characterised and that further assessment may be required.

AEC Description	Justification	Contaminants of Concern*	Comments
AEC 6: Former Possible Mineral Processing Area	Identified area of former possible mineral processing	Arsenic, cadmium and zinc	Inspection of historical aerial photographs indicated that the buildings present within the mineral processing area were constructed between 1961 and 1973. The historical aerial photographs indicate that the buildings were demolished prior to 1984. Given that mining activities were understood to have taken place between the 1850s and the early 1900s, it is considered that the remnant structures observed in this area may not have been associated with mineral processing activities. Nevertheless, Coffey indicated that concentration of selected metals were above adopted site criteria in soils in an area associated with two drainage sump structures. In the RAP for this area, Coffey recommended that this contamination be removed off-site along with the demolition of those structures. Inspection by DP indicated that the condition of the area of the possible mineral processing area was similar to that encountered by Coffey in 2010a. DP has reviewed the RAP prepared by Coffey, and broadly agrees with the preferred remediation option selected and considers that following the remediation and successful validation of the sump structures, the area of the site would likely be suitable for residential end-use.
AEC 7: Former Sheep Dip	Sheep dip site.	Arsenic, organochlorine pesticides	The sheep dip area was identified by Coffey as an area that required remediation. Subsequently Coffey prepared a separate RAP for the sheep dip area. Review of the RAP indicated that demolition of the sheep dip structure followed by excavation and off-site disposal of the surrounding soils was the preferred remediation option for this area. DP broadly agrees with the remediation option selected in the RAP and considers that following successful remediation and validation of the sheep dip area, the area could be made suitable for residential use.

Notes

* Contaminants of concern for AEC 2, AEC 3, AEC 6 and AEC 7 based on laboratory results from previous investigations where concentrations were above adopted site criteria

11. Conceptual Site Model

11.1 Coffey Conceptual Site Model

Coffey (2010a) presented a conceptual site model (CSM) for the site as part of the Stage 3 Contamination Assessment. The details of the CSM are detailed in Section 13 and Figure 10 of the report (included in Appendix C).

The CSM presented in Coffey (2010a) characterised potential sources, and identified potentially active pathways and receptors.

11.1.1 Contamination Sources

The potential sources were limited to areas of mining activity as follows:

AEC2 – Mine Site 3;
AEC3 – Mine Site 4; and
AEC6 – Former Possible Mineral Processing/Stockyard Area

Coffey did not include the sheep dip in the CSM as part of the original objectives of the Stage 3 Contamination Assessment was to identify potential areas of investigations not detected during previous investigations.

11.1.2 Potential Receptors

Coffey considered potential receptors included

CR1 – Site users, including residents and visitors
CR2 – Site workers, involved in construction, services, landscaping or maintenance activities;
CR3 – On-site or off-site users of groundwater; and
CR4 – Local plants, vertebrates and invertebrates

11.1.3 Potential Pathways

Potential migration pathways were identified as:

CP1 – Air as a result of wind action and dust movement (inhalation of dust);
CP2 – Groundwater migration;
CP3 – Surface water migration;
CP4 – Sediment movement (erosion);
CP5 – Dermal contact/ingestion of soils; and
CP6 – Food chain transfer.

11.1.4 Summary of Potential Complete Pathways

A summary of the Coffey CSM has been prepared for the site with reference to the National Environment Protection (Assessment of Site Contamination) Measure Schedule B2. The summary identifies potential contaminant sources and contaminants of concern, contaminant release mechanisms, exposure pathways and potential receptors. The summary is presented in Table 6 below.

Table 6: Summary of potential complete pathways for Coffey CSM

<table>
<tr><th>Source</th><th>Receptor</th><th>Transport Pathway</th><th>Comments</th></tr>
<tr><td rowspan="4">AEC2 – Mine Site 3</td><td>CR1</td><td>CP1, CP4, CP5, CP6</td><td rowspan="12">Coffey considered that dermal contact/ingestion of soil was the primary complete pathway where metal concentrations were reported to exceed applicable screening criteria over a large area. Sediment movement was also considered to be complete, but considered to be low risk due to the low level of concentrations of metals identified in stream sediment, with only two samples reporting metal concentrations exceeding the screening criteria.

Inhalation of dust was considered not to be complete, given soils were not greatly available to wind erosion. However, it was noted that this pathway may become complete during disturbance of the site. Food chain transfer was considered to be possible, but was considered that due to the skeletal soils not being suitable for growing edible produce, imported clean soils would be required to support healthy vegetation growth.

Whilst concentrations of metals exceeding the screening criteria were reported in surface and groundwater, Coffey considered these pathways were not active due to the depth of the water, meaning it is unlikely that the site users would come into contact with groundwater. Off-site users of groundwater were considered but Coffey considered that the risk was low.

In addition, surface water sampled was noted to be in standing pools within the lower reaches of the creek system. The site watercourses were noted to be ephemeral and not suited to recreational use. The pathway was considered to be complete but of low risk to human health for the proposed development.</td></tr>
<tr><td>CR2</td><td>CP1, CP4, CP5</td></tr>
<tr><td>CR3</td><td>CP2, CP3</td></tr>
<tr><td>CR4</td><td>CP4, CP5, CP6</td></tr>
<tr><td rowspan="4">AEC3 – Mine Site 4</td><td>CR1</td><td>CP1, CP4, CP5, CP6</td></tr>
<tr><td>CR2</td><td>CP1, CP4, CP5</td></tr>
<tr><td>CR3</td><td>CP2, CP3</td></tr>
<tr><td>CR4</td><td>CP4, CP5, CP6</td></tr>
<tr><td rowspan="4">AEC6 – Former Possible Mineral Processing/ Stockyard Area</td><td>CR1</td><td>CP1, CP4, CP5, CP6</td></tr>
<tr><td>CR2</td><td>CP1, CP4, CP5</td></tr>
<tr><td>CR3</td><td>CP2, CP3</td></tr>
<tr><td>CR4</td><td>CP4, CP5, CP6</td></tr>
</table>

11.2 CSM Addendum

An addendum to the CSM has been prepared by DP and is presented below. The addendum CSM considers the additional AECs have been identified following Coffey (2010a) and also includes the sheep dip. Whilst previous assessment of the sheep dip area has been completed, it has not previously been included in a CSM. As remediation works have yet to be completed it is considered an active source and should be included to compile a complete CSM for the site.

11.2.1 Additional Contamination Sources

AEC4 – Additional Mine Site (shaft)
AEC5 – Mining, quarrying and limekiln activities (JCH5, JCH6 and JCH13)
AEC7 – Former sheep Dip

11.2.2 Potential Receptors

Potential receptors include:

R1 – Current Users (unauthorised recreational users)
R2 – Construction and maintenance workers
R3 – Future residents and visitors
R4 – Groundwater
R5 – Surface Water (On-site creek system and Queanbeyan River)
R6 – Ecology

11.2.3 Potential Pathways

Potential pathways for contamination present include the following:

P1 – Incidental ingestion and dermal contact of soil and dust particulates
P2 – Outdoor inhalation of dust particulates
P3 – Ingestion of home-grown produce
P4 – Surface water run-off
P5 – Leaching of contaminants and vertical migration into groundwater
P6 – Lateral migration of groundwater providing base-flow to watercourses

11.2.4 Summary of Potential Complete Pathways

An addendum Conceptual Site Model (CSM) has been prepared for the site with reference to the National Environment Protection (Assessment of Site Contamination) Measure Schedule B2. The addendum CSM identifies potential contaminant sources and contaminants of concern, contaminant release mechanisms, exposure pathways and potential receptors. The addendum CSM is presented in Table 7.

Table 7: Summary of potential complete pathways for Addendum CSM

Source	Receptor	Transport Pathway	Comments
AEC4 – Additional mine site	R1	P1, P2	During site the site inspection, an additional mine site consisting of a shaft was encountered in the north-west part of the site, within the Stage 1 development area. Review of the Coffey Stage 3 Contamination area indicates that no intrusive investigation was undertaken in this area of the site. Therefore, DP considers that the potential for contamination in this area of the site has not been adequately characterised and that further assessment of the additional mine site is required.
	R2	P1, P2	
	R3	P1, P2 and P3	
	R4	P5	
	R5	P4 and P6	
	R6	P1	
AEC5 – Mining, quarrying and limekiln activities	R1	P1, P2	Review of the AAA (NSWA, 2009) indicated that items JCH5, JCH6 and JCH13 were possibly associated with either mining activity or limestone quarrying and processing (possible limekiln feature JCH6). Review of previous reports indicated that these areas have not previously been assessed. Therefore, DP considers that the potential for contamination in this area of the site has not been adequately characterised and that further assessment may be required.
	R2	P1, P2	
	R3	P1, P2 and P3	
	R4	P5	
	R5	P4 and P6	
	R6	P1	
AEC7 – Sheep Dip	R1	P1, P2	Previous investigation has indicated reported concentrations of arsenic above applicable screening criteria. A RAP has been prepared for this area, however, until successful remediation and validation of this area is completed, DP considers that the pollutant linkages are complete.
	R2	P1, P2	
	R3	P1, P2 and P3	
	R4	P5	
	R5	P4 and P6	
	R6	P1	

12. Field Work, Analysis and Quality Assurance/Quality Control

12.1 Sample Rationale

Following review of the request for additional information by QPRC, DP mobilised to site to obtain additional soil samples. Based on review of the QPRC correspondence, the additional mine site, the limestone quarry (item JCH5) and the area of possible mining activity in the south-west part of the site (JCH13) were selected for sampling. Given the nature of these areas with the identified AEC being the spoil associated with the mining and quarrying activity, near surface samples of the spoil were considered appropriate to assess the AECs.

Samples were not collected from the possible limekiln (JCH6) as following inspection of the area, no evidence of burning was noted (e.g. ash or scorch marks). CoPC likely associated with use of the feature as a limekiln are considered to be limited to PAHs and given that no ash was present in the visible surface soil, testing was not considered to be required at this time.

12.2 Methods and Sampling Locations

The fieldwork comprised the excavation of 10 shallow test pits (Pits ASM1 to ASM4, JCH5-1 and JCH5-2 and JCH13-1 to JCH13-4) to TP10) to a maximum depth 0.2 m below ground level (bgl) using stainless steel hand tools Samples were collected directly from the hand tools. The sampling locations are presented on Drawings 5 and 6, Appendix B.

Fieldwork was undertaken on 21 July 2020 by an environmental scientist who undertook the following:

- Setting out of the test locations;
- Logging of the subsurface profile; and
- Collection of samples for laboratory testing purposes.

12.3 Soil Sampling Procedure

All sample locations were checked for underground services by a review of dial before you dig (DBYD) plans. DBYD plans indicated that no services were located in the area.

All sampling data was recorded on DP test pit logs with essential information included on the chain-of-custody sheets. The general sampling procedure adopted for the collection of environmental samples is summarised below:

- Decontamination of reusable sampling equipment using a phosphate free detergent (Decon90);
- The use of disposable gloves for each sampling event;
- Transfer of samples into laboratory-prepared glass jars, and capping immediately;
- Collection of replicate samples for QA/QC purposes;
- Labelling of sample containers with individual and unique identification, including project number, sample location and sample depth;
- Placement of the sample jars and replicate sample bags into a cooled, insulated and sealed container for transport to the laboratory; and
- Use of chain of custody (C-O-C) documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory.

Samples were generally collected from the near surface within each test location.

Soil samples were collected directly from the hand tools used to excavate the pits. Care was taken whilst collecting the samples to remove any extraneous material deposited on the pit walls or soil removed from the pits during the excavation process. The tools were decontaminated between each sampling location.

Envirolab Services Pty Ltd (Envirolab, NATA accreditation number: 2901) was used for the analysis of the primary and replicate soil samples. The laboratory is required to carry out routine in-house QC procedures.

Field replicates were recovered, and analysed for a limited suite of contaminants with reference to standard industry practice and guidelines. The comparative results are outlined in Appendix G together with other QA/QC evaluations of the assessment, C-O-C documentation (Field and Laboratory) and sample receipt information.

12.4 Analytical Rationale

The analytical scheme was designed to obtain an indication of the presence of COPC that may be attributable to past and present activities and features within the site, as discussed in Section 10. Selected primary soil samples were analysed for metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn).

Laboratory analytical methods were as stated in the Envirolab certificates of analysis (Nos. 245733 and 245733-A) in Appendix G.

Three soil samples were also selected for analysis for cation exchange capacity (CEC) and pH to assist with the calculation of ecological investigation levels (EIL).

12.5 Quality Assurance and Quality Control

The field QA/QC procedures for sampling as prescribed in Douglas Partners' *Field Procedures Manual* were followed during the assessment. The QA/QC procedures and results are summarised in Appendix H.

Envirolab Services Pty Ltd (Envirolab) (NATA accreditation number: 2901) was used for the analysis of soil samples. The laboratory is required to carry out routine in-house QC procedures. Envirolab is NATA accredited and is required to conduct in-house QA/QC procedures. These are normally incorporated into every analytical run and include reagent blanks, spike recovery, surrogate recovery and duplicate samples. These results are included in the laboratory certificates and are evaluated in the QA/QC procedures and results summary in Appendix H.

13. Site Assessment Criteria

The site is proposed to be developed for a mixture of low density residential and public open space uses, in addition, a number of roadways will be constructed across the development allowing access to the estate.

The Site Assessment Criteria (SAC) applied in the current investigation are informed by the CSM (refer to Section 11*)* which identified human and environmental receptors to potential contamination on the site. Analytical results were assessed (as a Tier 1 assessment) against the SAC comprising the investigation and screening levels of Schedule B1, *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013 (NEPC, 2013). The NEPC guidelines are endorsed by the NSW EPA under the *Protection of the Environment Operations Act* 1997. Petroleum based health screening levels for direct contact and vapour inhalation from the *Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Report no.10 Health screening levels for petroleum hydrocarbons in soil and groundwater* (2011) as referenced by NEPC (2013) have not been considered in this assessment as these values are significantly higher than the soil vapour HSL adopted.

The investigation and screening levels are applicable to generic land use settings and include consideration of, where relevant, the soil type and the depth of contamination. The investigation and screening levels are not intended to be used as clean up levels. Rather, they establish concentrations above which further appropriate investigation (e.g. Tier 2 assessment) should be undertaken. They are intentionally conservative and are based on a reasonable worst-case scenario.

13.1 Health Investigation and Screening Levels

The Health Investigation Levels (HIL) and Health Screening Levels (HSL) are scientifically-based, generic assessment criteria designed to be used in the first stage (Tier 1) of an assessment of potential human health risk from chronic exposure to contaminants.

HILs are applicable to assessing health risk arising via all relevant pathways of exposure for a range of metals and organic substances. The HIL are generic to all soil types and apply generally to a depth of 3 m below the surface for recreational/open space land use. A depth of 1 m below the surface has been adopted for this investigation for the proposed sensitive land use.

HSLs are applicable to selected petroleum compounds and fractions to assess the risk to human health via inhalation. HSL have been developed for different land uses, soil types and depths to contamination.

The generic HIL and HSL are considered to be appropriate for the assessment of contamination at the site. Given the proposed land use, the adopted HIL and HSL are:

- HIL-A – residential with garden/accessible soil;
- HIL-C – public open space; and
- HIL D – commercial/industrial (restricted to areas where roadways will be present).

The adopted soil HIL and HSL for the potential CoPC are presented in Table 8.

Table 8: Health Investigation and Screening Levels (HIL and HSL) in mg/kg unless otherwise indicated

Contaminants		HIL-A	HIL-C	HIL-D
Metals	Arsenic	100	300	3,000
	Cadmium	20	90	900
	Chromium (VI)	100	300	3,600
	Copper	6,000	17,000	240,000
	Lead	300	600	1,500
	Mercury (inorganic)	40	80	730
	Nickel	400	1,200	6,000
	Zinc	7,400	30,000	400,000
OCP	Aldrin + Dieldrin	6	10	45
	Chlordane	50	70	530
	DDT+DDE+DDD	240	400	3,600
	Endosulfan	270	340	2,000
	Endrin	10	20	100
	Heptachlor	6	10	50
	HCB	10	10	80
	Methoxychlor	300	400	2,500
OPP	Chlorpyrifos	160	250	2,000
PAH	Benzo(a)Pyrene	3	4	40
	Total PAH	300	400	4,000

Notes:

1 NC – No Criteria

13.2 Ecological Investigation Levels

Ecological Investigation Levels (EIL) have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems (NEPC, 2013). EIL depend on specific soil physiochemical properties and land use scenarios and generally apply to the top 1 m of soil, which corresponds to the root zone and habitation zone of many species. The EIL is determined for a contaminant based on the sum of the ambient background concentration (ABC) and an added contaminant limit (ACL). The ABC of a contaminant is the soil concentration in a specific locality that is the sum of naturally occurring background levels and the contaminants levels that have been introduced from diffuse or non-point sources (e.g. motor vehicle emissions). The ACL is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required.

The EIL is calculated using the following formula:

EIL = ABC + ACL

The ABC is determined through direct measurement at an appropriate reference site or through the use of methods defined by Olszowy et al *Trace element concentrations in soils from rural and urban areas of Australia*, Contaminated Sites monograph no. 4, South Australian Health Commission, Adelaide, Australia 1995 (Olszowy, 1995) or Hamon et al, *Geochemical indices allow estimation of heavy metal background concentrations in soils*, Global Biogeochemical Cycles, vol. 18, GB1014, (Hamon, 2004). ACL is based on the soil characteristics of pH, CEC and clay content.

EIL (and ACLs where appropriate) have been derived in NEPC (2013) for only a short list of contaminants comprising As, Cu, Cr (III), DDT, naphthalene, Ni, Pb and Zn. An *Interactive (Excel) Calculation Spreadsheet* may be used for calculating site-specific EIL for these contaminants, and has been provided in the ASC NEPM Toolbox available on the SCEW (Standing Council on Environment and Water) website (http://www.scew.gov.au/node/941).

The adopted EIL, derived from the *Interactive (Excel) Calculation Spreadsheet* are shown in the following Table 9. The following site specific data and assumptions have been used to determine the EILs:

- A protection level of 80% for areas of the site characterised by urban residential and public open space land uses has been adopted;
- A protection level of 60% for areas of the site characterised by commercial/industrial land uses has been adopted;
- The EILs will apply to the top 1 m of the soil profile;
- Given the likely source of soil contaminants (i.e. historical filling, stockpiles and hummocky ground) the contamination is considered as "aged" (>2 years);
- ABCs have been derived using the *Interactive (Excel) Calculation Spreadsheet* using input parameters of NSW for the State in which the site is located, and low for traffic volumes. No background concentration is assumed for lead (conservative); and
- Based on average pH, CEC and clay content values for soils collected across the site, the following values have been used for the soil profile: pH = 8.3, CEC = 24 $cmol_c$/kg and clay content = 18%. The Calculation Spreadsheets are included in Appendix I and the EILs are presented in Table 9 below.

Table 9: Ecological Investigation Levels (EIL) in mg/kg

	Analyte		EIL	Comments
Residential / public open space	Metals	Arsenic	100	Adopted pH of 8.3, CEC of 24 cmol$_c$/kg and clay content 18%
		Copper	230	
		Nickel	310	
		Chromium III	490	
		Lead	1,100	
		Zinc	880	
	OCP	DDT	180	
Commercial / Industrial	Analyte		EIL	Comments
	Metals	Arsenic	160	Adopted pH of 8.3, CEC of 24 cmol$_c$/kg and clay content 18%
		Copper	330	
		Nickel	520	
		Chromium III	810	
		Lead	1,800	
		Zinc	1,300	
	OCP	DDT	640	

Note that the same EILs were applicable to both residential and public space uses.

13.3 Ecological Screening Levels – Petroleum Hydrocarbons

Given that petroleum hydrocarbons have not been identified as a CoPC for the site, ecological screening levels have not been applied and are not considered further.

13.4 Management Limits – Petroleum Hydrocarbons

Given that petroleum hydrocarbons have not been identified as a CoPC for the site, management limits have not been applied and are not considered further.

13.5 Asbestos in Soil

Bonded asbestos-containing material (ACM) is the most common form of asbestos contamination across Australia, generally arising from:

- Inadequate removal and disposal practices during demolition of buildings containing asbestos products;
- Widespread dumping of asbestos products and asbestos containing filling on vacant land and development sites; and
- Commonly occurring in historical filling containing unsorted demolition materials.

Mining, manufacturing or distribution of asbestos products may result in sites being contaminated by friable asbestos including free fibres. Severe weathering or damage to bonded ACM may also result in the formation of friable asbestos comprising fibrous asbestos (FA) and/or asbestos fines (AF).

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both FA and AF materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

Potential ACM fragments were observed during the site inspection walkover, however, given the skeletal nature of soils at the site and given the relative few buildings located on the site, as observed following historical aerial photography review, it is considered likely that ACM fragments would remain on the site surface where they can be managed through under a construction environment management plan.

14. Results of the Investigation

14.1 Additional Site Inspection Observations

An additional targeted site inspection was undertaken during the field works undertaken on 21 July 2020. The following observations were made:

Lime kiln - JCH6 (AEC 5)

- The limekiln was noted to be a circular pit approximately 5 m across and 1.5 m deep;
- Limestone boulders were present lining the mouth of the pit; and
- The pit was noted to be overgrown with vegetation, however, no staining or evidence of remnants of burning, (e.g. ash or scorch marks) were noted on the exposed faces of the pit and no evidence of burning was noted.

Limestone Quarry – JCH5 (AEC5)

- The limestone quarry comprising JCH5 was located to the north-east of the additional mine site;
- The quarry was approximately 20 m wide and 20 m long and was cut into the slope. Stockpiled spoil consisting of gravel to boulder sized fragments of limestone rock was present to east of the quarry area; and
- No staining or odorous soils were noted.

Possible Mining Activity site -JCH13 (AEC5)

- The area of possible mining activity comprised a stockpile consisting of gravel to boulder sized fragments of limestone rock and a linear cut, running north-south, into a hill crest. The stockpile was located at the northern end of the cut;

- The linear cut was approximately 60 m long, approximate 1 m deep at its deepest and 3 m to 4 m wide;
- Soil and rock formed an embankment on either side of the cut. On the eastern side, the material comprised sandy gravel with limestone cobbles and boulder. On the western side, the material comprised limestone cobbles and boulders; and
- No staining or odorous soils were noted.

Additional Mine Site (AEC4)

- The additional mine site was also reinspected during the site inspection. Some of the vegetation had died back since the previous inspection completed in August 2018 and described in Section 8. It was possible to assess the depth of the shaft, which was approximate 2 m deep. Given the depth of the shaft, it is not considered that extensive mining activity is likely to have occurred in this area;

14.2 Ground Conditions

14.2.1 Additional Mine Site

The samples collected from the additional mine site were collected from spoil located at the mouth of the shaft. Samples were logged as light brown to brown, silty gravelly sand, with some cobbles. The gravel and cobbles comprised light grey shale.

14.2.2 Limestone Quarry – JCH5

The samples collected from the limestone quarry were collected from the stockpiled spoil and the mouth of the quarry. The sample collected from the stockpiled spoil comprised grey limestone cobbles and boulders with fine to coarse grained sand. The sample from the quarry mouth comprised red brown to brown, silty clay with some fine to coarse grained sand.

14.2.3 Mining Activity Site – JCH13

The samples from the area described as JCH13 were collected from a small stockpile at the northern end and soil forming an embankment on the eastern side of the feature. The samples were logged as comprising grey to brown sandy gravel with cobbles and boulders. The gravel, cobbles and boulders comprised limestone.

Material forming an embankment on the western site of the feature was not sampled as it comprised limestone boulders.

14.3 Analytical Results

A summary of the results of the laboratory analysis undertaken by Coffey in 2010a is presented in Tables J1 to J7, Appendix J. The locations of the samples collected by Coffey are presented within Figures 3 to 7 in Coffey (2010a), presented in Appendix C.

A summary the results of the laboratory analysis undertaken on the soil samples collected from the additional mine site, JCH5 and JCH13, along with a comparison to the adopted screening criteria is presented in Table J8, Appendix J. Laboratory certificates of analysis are presented in Appendix G.

14.4 Assessment of Soil Laboratory Results

14.4.1 Coffey (2010a)

The laboratory analysis results of samples reported in Coffey (2010a) were compared to the site assessment criteria published in ASC NEPM (1999, as amended 2013) and referenced in Section 13. The results are presented with reference to the Domains of Interest identified by Coffey (2010a) (see Section 6.3 and Appendix C). Many reported concentrations of CoPC exceeded the updated site assessment criteria. The exceedances are summarised in Tables 10 to 12 below and for clarity the AEC number (as defined in this report) is included. The sample locations are shown in Figures 3 to 7 in Coffey (2010a) presented in Appendix C.

Domain Of Interest 1

Table 10: Summary of reported concentrations exceeding screening criteria - Coffey DOI1

Sample ID	HIL-A	HIL-C	EIL
AEC2: Mine Site 3			
MS3-1_0.0-0.2	Proposed land use is public open space. HIL-A not applied.	As, Pb	As, Pb, Zn
MS3-2_0.0-0.2		As, Pb	As, Pb, Zn
MS3-4_0.0-0.2		-	As
MS3-5_0.0-0.2		As, Pb	As, Pb, Zn
MS3-6_0.0-0.2		As, Pb	As, Pb, Zn
MS3-7_0.0-0.2		As, Pb	As, Pb, Zn
MS3-8_0.0-0.2		As, Pb	As, Cu, Pb, Zn
MS3-9_0.0-0.2		-	As
MS3-10_0.0-0.2		-	As
MS3-11_0.0-0.2		-	As
MS3-12_0.0-0.2		-	As
MS3-13_0.0-0.2		-	As
MS3-13_0.5-0.6		-	As
MS3-14_0.0-0.2		-	As
MS3-15_0.0-0.2		-	As
MS3SP3		-	As
Coffey defined residential areas			
RE34_0.0-0.2	Updated proposed land use is public open space. HIL-A not applied.	-	As

Notes

- No reported concentrations exceeded the site assessment criteria
- Samples prefixed 'MS3' obtained from Mine Site 3

Domain of Interest 2

Table 11: : Summary of reported concentrations exceeding screening criteria - Coffey DOI2

<table>
<tr><th>Sample ID</th><th>HIL-A</th><th>HIL-C</th><th>EIL</th></tr>
<tr><td colspan="4">AEC6: Former Mineral Processing/Stockyard Area – JCH8</td></tr>
<tr><td>MP6_0.0-0.2</td><td>Pb</td><td rowspan="9">Proposed land use is Residential. HIL-C not applied</td><td>-</td></tr>
<tr><td>MP14_0.0-0.2</td><td>Pb</td><td>-</td></tr>
<tr><td>MP14_0.5-0.6</td><td>Pb</td><td>-</td></tr>
<tr><td>MP15_0.0-0.2</td><td>Pb</td><td>-</td></tr>
<tr><td>MP15_0.5-0.6</td><td>Pb</td><td>-</td></tr>
<tr><td>MP16_0.0-0.2</td><td>Pb</td><td>-</td></tr>
<tr><td>MP16_0.5-0.6</td><td>Pb</td><td>-</td></tr>
<tr><td>MPSUMP-1</td><td>-</td><td>Zn</td></tr>
<tr><td>MPSUMP-2</td><td>Zn</td><td>Zn</td></tr>
<tr><td colspan="4">AEC3: Mine Site 4 – JCH7</td></tr>
<tr><td>MS4-7_0.0-0.2</td><td rowspan="20">Proposed land use is public open space. HIL-A not applied.</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-8_0.0-0.2</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-9_0.0-0.2</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-14_0.0-0.2</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-15_0.0-0.2</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-22_0.0-0.2</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-23_0.0-0.2</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-24_0.0-0.2</td><td>Pb</td><td>Pb, Zn</td></tr>
<tr><td>MS4-25_0.5-0.6</td><td>Pb</td><td>-</td></tr>
<tr><td>MS4-26A_0.5-0.6</td><td>Cd, Pb, Zn</td><td>Pb, Zn</td></tr>
<tr><td>MS4-27_0.0-0.2</td><td>Pb</td><td>Cu, Pb, Zn</td></tr>
<tr><td>MS4-37_0.0-0.2</td><td>Pb</td><td>Cu, Pb, Zn</td></tr>
<tr><td>MS4-38_0.0-0.2</td><td>Pb</td><td>Cu, Pb, Zn</td></tr>
<tr><td>MS4-39_0.0-0.2</td><td>Pb</td><td>Cu, Pb, Zn</td></tr>
<tr><td>MS4-41_0.0-0.2</td><td>-</td><td>Zn</td></tr>
<tr><td>MS4-45_0.0-0.2</td><td>-</td><td>Zn</td></tr>
<tr><td>MS4SP1</td><td>Cd, Pb, Zn</td><td>As, Cu, Pb, Zn</td></tr>
<tr><td>MS4SP5</td><td>Pb</td><td>Pb</td></tr>
<tr><td>MS4SP7</td><td>Pb</td><td>Pb</td></tr>
<tr><td>MS4SP9</td><td>Pb</td><td>Pb</td></tr>
</table>

Notes

- No reported concentrations exceeded the site assessment criteria
- Samples prefixed ‘MP’ obtained from Former Mineral Processing/Stockyard Area
- Samples prefixed ‘MS4’ obtained from Mine Site 4

Domain of Interest 5

Table 12: : Summary of reported concentrations exceeding screening criteria - Coffey DOI5

Sample ID	HIL-A	HIL-C	EIL
RE18_0.0-0.2	-	-	Zn

Notes

- No reported concentrations exceeded the site assessment criteria

14.4.2 Additional Sampling, DP

The laboratory analysis results of the recently collected samples were compared to the site assessment criteria referenced in Section 13. A summary of samples with reported concentrations of CoPC exceeding the site assessment criteria is presented in Table 13.

Table 13: Summary of reported concentrations exceeding screening criteria - Additional sampling

Sample ID	HIL-A	HIL-C	EIL
AEC4: Additional Mine Site			
ASM1 0.1-0.2	Cd, Pb and Zn	-	Pb and Zn
ASM3 0.1-0.2	-	-	Zn
AEC 5: Item JCH5 – Limestone Quarry			
JCH5-2	Pb	-	Zn

15. Discussion of Results

15.1 Updated assessment of Coffey (2010a) Results

Since Coffey (2010a) was prepared, the ASC NEPM has been updated and revised site assessment criteria for new generic land use scenarios have been released. The revised site assessment criteria are risk based and were updated to reflect current knowledge. DP have reviewed the work completed by Coffey and given that the CoPC identified at the site were metals and pesticides, considered it appropriate to assess the results presented in Coffey (2010a) against the current site assessment criteria detail in the ASC NEPM (1999, as amended 2013).

The proposed development layout has also been updated in the intervening time with public open space areas being included in more of the site, specifically the south-western part of the site. The results from the sampling undertaken by Coffey were compared to screening criteria applicable to the land use scenario in that part of the site. Discussion of the results is provided below.

15.1.1 AEC 2: Mine Site 3

Mine Site 3 is located in an area of the site that will not be developed for residential development, therefore the results presented in Coffey (2010a) have been assessed against HIL-C (public open space) and EILs. Six samples collected from the area reported concentrations of metals that exceeded the HIL-C criteria, often by an order of magnitude and 16 samples report concentrations of metals that exceeded the EIL criteria. Based on the assessment against the currently applicable criteria, DP considers that the concentrations detected within Mine Site 3 indicate that the area is not suitable for public open space use and requires management and/or remediation to make it suitable for the proposed use.

15.1.2 AEC 3: Mine Site 4

Mine Site 4 is located in an area of the site that will not be developed for residential development, therefore the results presented in Coffey (2010a) have been assessed against HIL-C (public open space) and EILs. Eighteen samples collected from the area reported concentrations of metals that exceeded the HIL-C and EIL criteria, often by several orders of magnitude and one additional sample reported concentrations of metals that exceeded the EIL criteria. The samples were located in three distinct areas across the area indicating differential processing during mineralisation may have occurred.

Based on the assessment against the currently applicable criteria, DP considers that the concentrations detected within Mine Site 4 indicate that the area is not suitable for public open space use and requires management and/or remediation to make it suitable for the proposed use.

15.1.3 AEC 6: Possible Mineral Processing/Stock holding area

AEC 6 is located in an area of the site where residential development is currently proposed and therefore the results presented in Coffey (2010a) have been assessed against HIL-A and EILs. Seven samples collected from the area reported concentrations of lead greater than HIL-A, however, the reported concentrations only marginally exceeded the criteria. The HIL-A criteria for lead is 300 mg/kg and reported concentrations greater than HIL-A ranged from 300 mg/kg to 400 mg/kg. It is also noted that the HIL for lead applicable at the time of Coffey (2010a) was also 300 mg/kg. Following calculation of the 95% Upper Confidence Limit ($UCL_{average}$), for samples collected from the area, Coffey considered that as the 95% $UCL_{average}$ for lead was below the HIL-A and no single result exceeded 250% of the HIL-A, the concentrations of lead detected were considered not to pose an environmental or health risk for the development.

Samples were also collected from within two drainage sumps identified within the area. Reported concentrations of zinc in these samples were above the EIL criteria and one of the reported concentrations was above the HIL-A criterion. Given the samples were collected from drainage sumps where it is likely that soil/sediment run-off would be concentrated, DP considers that use of results from surface sampling across the area to calculate summary statistics is not appropriate. DP considers that the concentrations detected within the two drainage sumps indicate that the area is not currently suitable for residential use and requires remediation to make it suitable for the proposed use.

15.1.4 Systematic sampling

Coffey undertook systematic sampling across the site in areas that were proposed for residential development and open space areas. A total of 45 samples were obtained from previously proposed residential areas and 24 samples collected from proposed open space areas. The results from these samples were compared to HIL-A, HIL-C and EIL criteria based on the current proposed development plans.

Sample RE18_0.0-0.2 reported a zinc concentration exceeding the EIL. It is noted that since the publication of the ASC NEPM (1999, as amended 2013), soil characteristics including pH, clay content and cation exchange capacity are used to generate site specific EILs. During the recent sampling undertaken by DP, samples were analysed for these analytes to generate site specific EILs. It is noted that the EIL derived from the site in this assessment is four times greater than used in Coffey (2010a). At the time of the assessment, Coffey discounted the reported zinc concentration on the basis that no mining activities had been identified in the immediate area of sample RE18. Following DP (2019), a mine site and quarrying activity was identified close to the location of sample RE18. DP therefore considers that management and/or remediation of this area is required. DP notes that the location of RE18 is likely within a residential block and the importation of clean material may be a suitable management option for this area, subject to development of a RAP for the area.

Sample RE34_0.0-0.2 reported an arsenic concentration exceeding the EIL. In Coffey, (2010a), the concentration was noted to exceed the criterion for residential use, which was proposed for that area of the site. However, the area where sample RE34 was located is now proposed for public open space use. Coffey collected samples to delineate the area and the results indicated that the area of elevated arsenic was localised. DP considers that due to the minor exceedance, that further management in the location of sample RE34 is not required.

15.2 Discussion of additional investigation results

DP collected samples from additional AECs including the additional mine site, the limestone quarry (JCH5) and the area of potential mining activity (JCH13). Samples were not collected from the possible limekiln (JCH6) as CoPC likely associated with use of the feature as a limekiln are considered to be limited to PAHs. Given that no ash was present in the visible surface soil, testing was not considered to be required at this time.

Samples collected from the additional mine site (AEC4) were submitted for metal analysis. The laboratory results were assessed against HIL-A and EIL criteria. One sample (ASM1) reported concentrations of metals exceeding HIL-A and two samples reported metal concentrations that exceeded EIL criteria. Whilst it is understood that AEC4 is located within an area proposed for residential development, it is understood that AEC4 will be covered by a roadway. Whilst DP considers that the reported concentrations of metals indicated that the area is currently not suitable for residential use, it is considered that the area can be suitably managed. It is recommended that the remediation action plan for the site be updated to include the area. Following suitable remediation and validation, it is considered that the area can be made to be compatible with the proposed land use.

One sample collected from AEC5 (limestone quarry) reported concentrations of metals exceeding the HIL_A and EIL criteria. It is noted that this sample was collected from soil at the mouth of the quarry and not the limestone stockpile present within the quarry feature. Similarly to AEC4, AEC5 (limestone quarry) is located within a proposed residential area and will likely be covered by a roadway. It is also recommended that the area be included in an updated remediation action plan for the site. Following suitable remediation and validation, it is considered that the area can be made to be compatible with the proposed land use.

Samples collected from AEC5 (JCH13) reported concentrations of metals below the applicable criteria. AEC5 (JCH13) is located in an area of the site proposed to be public open space and based on the results, further management or remediation of this feature, from a contamination perspective, is not required.

16. Revised Addendum Conceptual Site Model

The addendum CSM presented in Section 11 has been updated to incorporate the findings of this investigation. The updated CSM is presented in Table 14.

Table 14: Revised summary of potential pathways for Addendum CSM

Source	Receptor	Transport Pathway	Comments
AEC4 – Additional mine site	R1	P1, P2	During site the site inspection, an additional mine site consisting of a shaft was encountered in the north-west part of the site, within the Stage 1 development area. Review of the Coffey Stage 3 Contamination area indicates that no intrusive investigation was undertaken in this area of the site. Results of sampling of AEC 4 indicate that reported CoPC concentrations exceed site assessment criteria. It is recommended that the RAP be updated to include management/remediation of this area.
	R2	P1, P2	
	R3	P1, P2 and P3	
	R4	P5	
	R5	P4 and P6	
	R6	P1	
AEC5 – Mining, quarrying and limekiln activities	R1	P1, P2	Review of the AAA (NSWA, 2009) indicated that items JCH5, JCH6 and JCH13 were possibly associated with either mining activity or limestone quarrying and processing (possible limekiln feature JCH6). Review of previous reports indicated that these areas have not previously been assessed. Result of sampling from JCH5 indicate that reported CoPC concentrations exceed site assessment criteria. It is recommended that the RAP be updated to include management/remediation of this area. Results of sampling from JCH13 indicate that reported concentrations area below the site assessment criteria. DP consider the area is suitable for use for public open space.
	R2	P1, P2	
	R3	P1, P2 and P3	
	R4	P5	
	R5	P4 and P6	
	R6	P1	
AEC7 – Sheep dip	R1	P1, P2	Previous investigation has indicated reported concentrations of arsenic above applicable screening criteria. A RAP has been prepared for this area, however, until successful remediation and validation of this area is completed, DP considers that the pollutant linkages are complete.
	R2	P1, P2	
	R3	P1, P2 and P3	
	R4	P5	

Source	Receptor	Transport Pathway	Comments
	R5	P4 and P6	DP considers that once remediation and validation has been completed, the area would likely be suitable for residential use.
	R6	P1	

17. Conclusions and Recommendations

17.1 Conclusions

DP have undertaken review of previous environmental works at the site and reviewed a request for further information from QPRC in order to allow a decision to be made regarding the DA submitted for the site. The DA relates to the subdivision of the site and construction of a residential estate.

The objectives of this updated contamination assessment were to review previous works, inspect the site to assess its current condition, undertake intrusive investigation of additional AECs and advise on the need for ongoing management and/or remediation in order to support the DA.

Documents included for review included archaeological assessments, previous contamination assessments and site audit report and site audit statement prepared by the Site Auditor. It is noted that approximately ten years have passed since previous contamination assessment and site audit report was prepared and national guidance relating to the assessment of contaminated land (ASC NEPM 1999, as amended 2013) has been updated since the previous works were undertaken

Review of Coffey (2010a) identified several AECs as detailed below:

- AEC1: Mine Site 1;
- AEC2: Mine Site 3;
- AEC3: Mine Site 4;
- AEC6: Former Possible Mineral Processing/Stockyard Area;
- AEC7: Former Sheep Dip; and
- AEC8: Former Kiln.

DP site inspections, request from QPRC for additional information and review of previous Archaeological Assessments identified the additional AECs:

- AEC4: Additional Mine Site; and
- AEC5: Items JCH 5, JCH 6 and JCH 13 (as described in NSWA 2009);

In addition, several areas of minor waste dumping were identified on site including discarded car bodies and small quantities of building materials containing minor ACM fragments.

DP have assessed the results of the sampling conducted by Coffey (2010a) with site assessment criteria detailed in the ASC NEPM (1999, as amended 2013). The criteria selected were based on low density residential land use, public open space land use and ecological receptors. Following assessment of the results, it was concluded that:

- An area of elevated metals concentrations exists within soil and rock at AEC2: Mine Site 3. This area of the site is proposed for public open space use and the concentrations exceeded the adopted HIL-C and EIL criteria;
- An area of elevated metals concentrations exists within soil and rock at AEC3: Mine Site 4. This area of the site is proposed for public open space use and the concentrations exceeded the adopted HIL-C and EIL criteria;
- An area of elevated metals concentrations exists within soil and rock in drainage sumps located at AEC6: Mineral processing area. This area of the site is proposed for low density residential use and the concentrations exceeded the adopted HIL-C and EIL criteria;
- An area of elevated zinc concentrations exists within the vicinity of sample RE18. The concentration exceeded the EIL criteria. This area is proposed for low density use, but is likely located within a proposed road reserve area;
- An area of elevated arsenic concentration exceeding the EIL is located within the vicinity of sample RE34. The area was delineated by Coffey by additional sampling;
- It is considered that AEC2 and AEC3 are not currently suitable for public open space use and remediation and management should be undertaken. It is noted that remediation of these areas is detailed in the Coffey RAP (2010b). DP considers the RAP should be updated to include regulatory framework and legislation changes implemented following its preparation. Following implementation of the RAP, DP considers it likely that these areas of the site could be made suitable for public open space use;
- It is considered that the areas of the drainage sumps within AEC6 is not currently suitable for residential use. It is also noted that remediation of these areas is detailed in the Coffey RAP (2010b). Following implementation of the RAP and successful validation , DP considers it likely that this area of the site could be made suitable for residential use; and
- Coffey did not undertake assessment of the sheep dip area, but a RAP (Coffey, 2009) has been prepared for remediation and validation of the area. Following implementation of the RAP and successful validation, DP considers it likely that this area of the site could be made suitable for residential use.

DP undertook additional sampling of areas identified as AECs since Coffey (2010a) was prepared. Following assessment of the results it was concluded that:

- An area of elevated metals concentrations exists within soil and rock in samples collected from AEC4: Additional Mine Site and AEC5: limestone quarry. The area of the site is proposed for residential use and the concentrations exceeded HIL-A and the EIL criteria for AEC4 and EIL criteria for AEC5. Although the area is proposed for residential use, the area will likely be located within a road corridor; and
- No elevated concentrations were reported within AEC5: JCH 13. No further management or remediation is required in this area.

17.2 Recommendations

DP makes the following recommendations following this assessment:

- The RAPs prepared by Coffey (2009 and 2010b) should be updated to reflect the regulatory framework and legislation changes that have occurred since the preparation of the RAPs;
- Coffey RAP (2010b) should be updated to include remediation and management details for AEC4: additional mine site, AEC5: limestone quarry and the area around sample RE34;
- Once the RAPs are updated, the remediation, validation and management actions detailed should be implemented. In areas where capping of soil and rock is recommended, site environmental management plans should be implemented;
- It is also recommended that a construction environmental management plan including an unexpected finds protocol be prepared and implemented during site development works to manage areas of contamination that may exist outside the areas identified in this report. DP considers this is an appropriate way of managing small, isolated areas of concern such as anthropogenic waste, car bodies and building and demolition waste that may be present across the site; and
- Soil and rock that requires off-site disposal should be assessed prior to removal from the site. Given the proximity of the site to the ACT, it is possible soil may be disposed of in the ACT. Material for disposal should be assessed with reference to NSW EPA Waste Classification Guidelines, Part 1 Classifying Waste (2014) or Environment ACT, ACT's Environmental Standards: Assessment & Classification of Liquid and Non-liquid Wastes (2000).

DP also broadly agrees with the following recommendations made in Coffey (2010a)

- *Restriction of access to the Mine Site 3 and Mine Site 4 areas in the short term to avoid unhealthy exposures to metal concentrations in these areas, as well as unsafe conditions associated with mine shafts, adits and other structures;*
- *The removal or management of physical hazards (such as mine shafts or other structures) associated with these areas;*

The findings of the Site Audit Report and Site Audit Statement indicated that subject to the implementation of the remediation outlined in the RAPs, the site would be suitable for the following uses:

- Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry;
- Day care centre, preschool, primary school;
- Secondary school; and
- Park, recreational open space, playing field.

18. References

Abell, R.S. (1992). *Geology of Canberra Geological Series* Sheet 8727, 1:100 000. Canberra, Australia: Bureau of Mineral Resources Geology and Geophysics.

Coffey Environments Pty Ltd (2009) *Draft Remediation Action Plan, Sheep Dip Area, Jumping Creek, Queanbeyan, New South Wales.* Report ref ENVICANB00233AA-R02a, dated 21 October 2009

Coffey Environments Pty Ltd (2010a) Stage 3 *Contamination Assessment, Jumping Creek, Queanbeyan*, *NSW*. Report ref ENVICANB00233AA-R01b, dated 16 June 2010.

Coffey Environments Pty Ltd (2010b) *Draft Remediation Action Plan, Sheep Dip Area, Jumping Creek, Queanbeyan, New South Wales*. Report ref ENVICANN00233AA-R03a, dated 4 June 2010

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Environmental Strategies Pty Ltd (2010a) *Site Audit Report, Jumping Creek, Queanbeyan, NSW*. Report ref 9014SAR145, dated 20 August 2010.

Environmental Strategies Pty Ltd (2010b) *NSW Site Auditor Scheme, Site Audit Statement for Jumping Creek Site*. dated 25 August 2010.

Evans, W.R. (1984). *Hydrogeology of the Australian Capital Territory and Environs*, 1:100,000. Canberra, Australia: Bureau of Mineral Resources, Geology and Geophysics.

Friebel, E. and Nadebaum, P. (2011) *Technical Report no.10 Health screening levels for petroleum hydrocarbons in soil and groundwater, Summary*. Adelaide, Australia: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE).

Jenkins, B.R. (2000). *Canberra Soil Landscape Series*, Sheet 8727, 1:100 000. Sydney, Australia: NSW Department of Land and Water Conservation.

Navin Officer (2019) *Cultural Heritage Assessment, Jumping Creek, Queanbeyan, NSW*, dated 19 March 2019

New South Wales Archaeology Pty Ltd (2009), *Aboriginal Archaeological Assessment, Proposed Jumping Creek Rezoning, Queanbeyan, NSW*, dated January 2009

National Environment Protection Council (1999, as amended 2013). *National Environment Protection (Assessment of Site Contamination) Measure*.

NSW Environment Protection Authority (2017). *Guidelines for the NSW Site Auditor Scheme* (3rd ed). Sydney, Australia: NSW Environment Protection Authority.

NSW Environment Protection Authority (2020). *Consultants Reporting on Contaminated Land*. Sydney: NSW Environment Protection Authority.

19. Limitations

Douglas Partners (DP) has prepared this report for this project at Lot 1, DP1249543, Greenleigh, NSW in accordance with DP's proposal dated 11 April 2018 and acceptance received from PEET dated 25

May 2018. The work was carried out under the term and conditions of the sub-consultants agreement, dated August 2018. This report is provided for the exclusive use of PEET for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

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

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

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

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

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

About this Report

Douglas Partners

Introduction

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

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

Copyright

Borehole and Test Pit Logs

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

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

Groundwater

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

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

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

Reports

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

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

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

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

About this Report

Site Anomalies

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

Information for Contractual Purposes

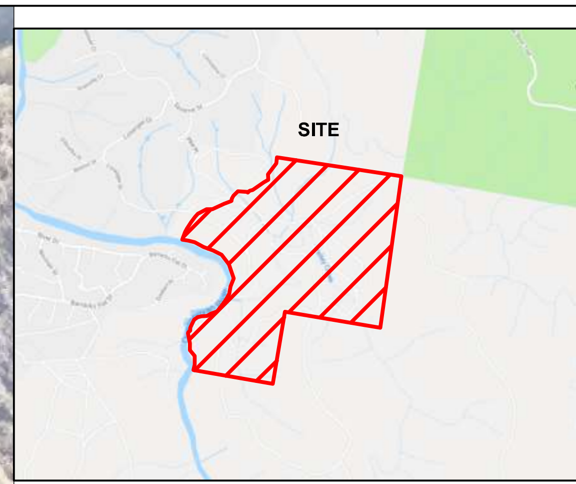
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate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

Site Inspection

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

Appendix B

Drawings



Locality Plan

LEGEND

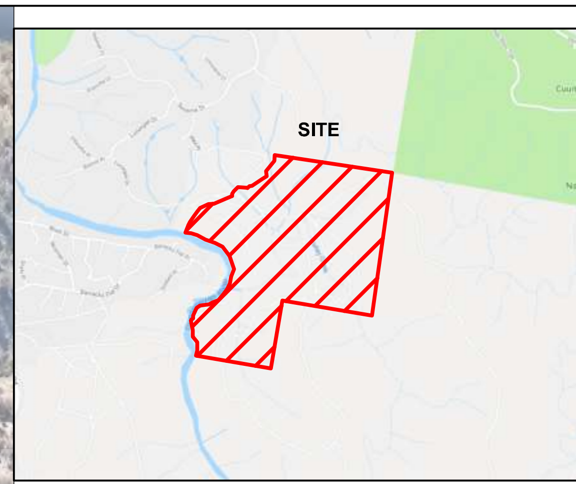
- Approximate Site Boundary
- Approximate Tributary Lines

0 50 100 150 200 250

1:5000 @ A3

NOTE: Base drawing from nearmap.com.au, dated 18 July 2018

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited	TITLE: **Site Location and Layout Plan**	PROJECT No: 88224.06
	OFFICE: Canberra / DRAWN BY: SDG	**Updated Contamination Assessment**	DRAWING No: 1
	SCALE: As Shown / DATE: 13.08.2020	**Jumping Creek Estate, Ellerton Drive, Queanbeyan**	REVISION: 0



Locality Plan

LEGEND

- Approximate Site Boundary
- Approximate Tributary Lines

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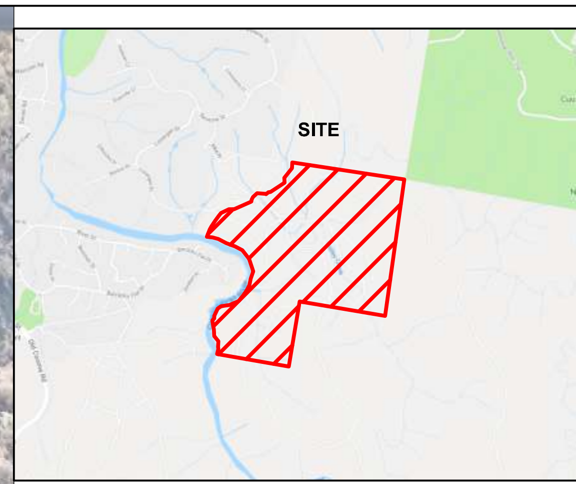
NOTE: Base drawing from nearmap.com.au, dated 18 July 2020)

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Proposed Development Plan**
	OFFICE: Canberra	DRAWN BY: SDG	**Updated Contamination Assessment**
	SCALE: As Shown	DATE: 13.08.2020	**Jumping Creek Estate, Ellerton Drive, Queanbeyan**

PROJECT No:	88224.06
DRAWING No:	2
REVISION:	0



Locality Plan

LEGEND

- Approximate Site Boundary
- Approximate Tributary Lines
- Approximate Mine Site Area
- Approximate Limestone Quarry Area
- Approximate Limekiln Location
- Approximate Sheep Dip Location
- Approximate JCH9, 11 & 12 Locations

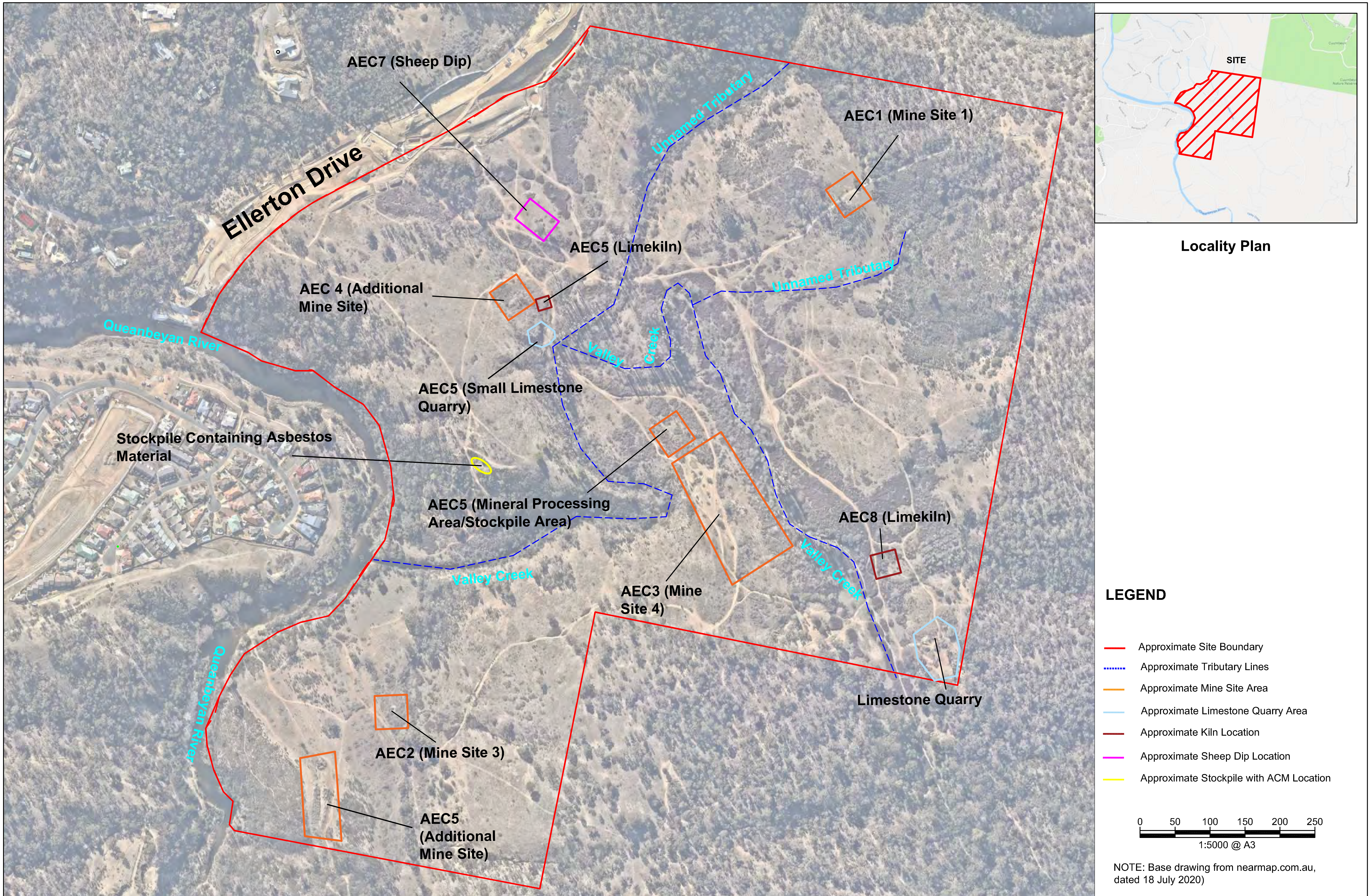
0 50 100 150 200 250

1:5000 @ A3

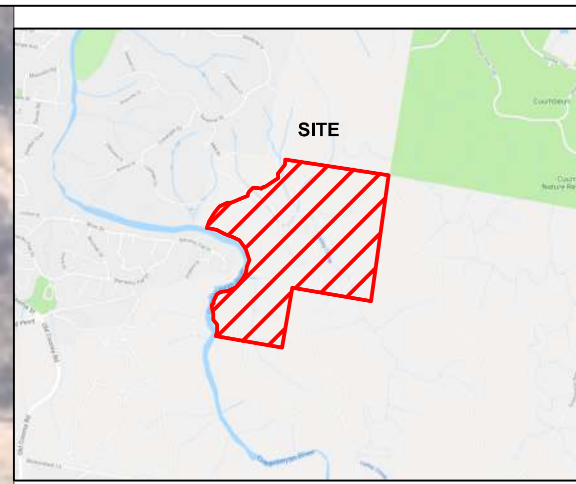
NOTE: Base drawing from nearmap.com.au, dated 18 July 2020)

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Peet Limited		TITLE: **Non-Indigenous Heritage Item Location Plan** **Updated Contamination Assessment** **Jumping Creek Estate, Ellerton Drive, Queanbeyan**	PROJECT No: 88224.06
OFFICE: Canberra	DRAWN BY: SDG		DRAWING No: 3
SCALE: As Shown	DATE: 13.08.2020		REVISION: 0



Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Areas of Environmental Concern Location Plan** **Updated Contamination Assessment** **Jumping Creek Estate, Ellerton Drive, Queanbeyan**	N	PROJECT No: 88224.06
	OFFICE: Canberra	DRAWN BY: SDG			DRAWING No: 4
	SCALE: As Shown	DATE: 13.08.2020			REVISION: 0



Locality Plan

LEGEND

- Approximate Mine Site Area
- Approximate Kiln Location
- Approximate ASM Series Test Location
- Approximate JCH5 Series Test Location

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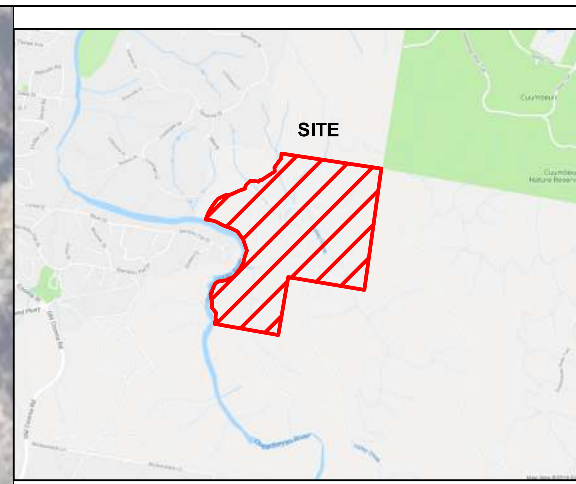
1:500 @ A3

NOTE: Base drawing from nearmap.com.au, dated 18 July 2020)

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Additional Sampling Location Plan (ASM and JCH5)** **Updated Contamination Assessment** **Jumping Creek Estate, Ellerton Drive, Queanbeyan**	PROJECT No: 88224.06
	OFFICE: Canberra	DRAWN BY: SDG		DRAWING No: 5
	SCALE: As Shown	DATE: 13.08.2020		REVISION: 0



Locality Plan

LEGEND

- Approximate Site Boundary
- Approximate Mine Site Area
- Approximate JCH13 Series Test Location

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NOTE: Base drawing from nearmap.com.au, dated 18 July 2020)

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Additional Sampling Location Plan (JCH13)** **Updated Contamination Assessment** **Jumping Creek Estate, Ellerton Drive, Queanbeyan**	PROJECT No: 88224.06
	OFFICE: Canberra	DRAWN BY: SDG		DRAWING No: 6
	SCALE: As Shown	DATE: 13.08.2020		REVISION: 0

Appendix C

Site History Searches

Queanbeyan City Council

Queanbeyan Local Environmental Plan 2012

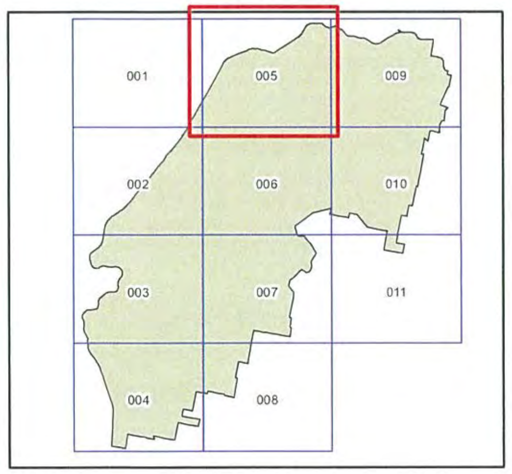
Land Zoning Map - Sheet LZN_005

Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B3 Commercial Core
- B4 Mixed Use
- B5 Business Development
- E1 National Parks and Nature Reserves
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living
- IN1 General Industrial
- IN2 Light Industrial
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU2 Rural Landscape
- SP1 Special Activities
- SP2 Infrastructure
- W1 Natural Waterways
- DM Deferred Matter

Cadastre

Cadastre 29/08/18 © Spatial Services



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Projection: GDA 94
MGA Zone 55

Map Identification Number:
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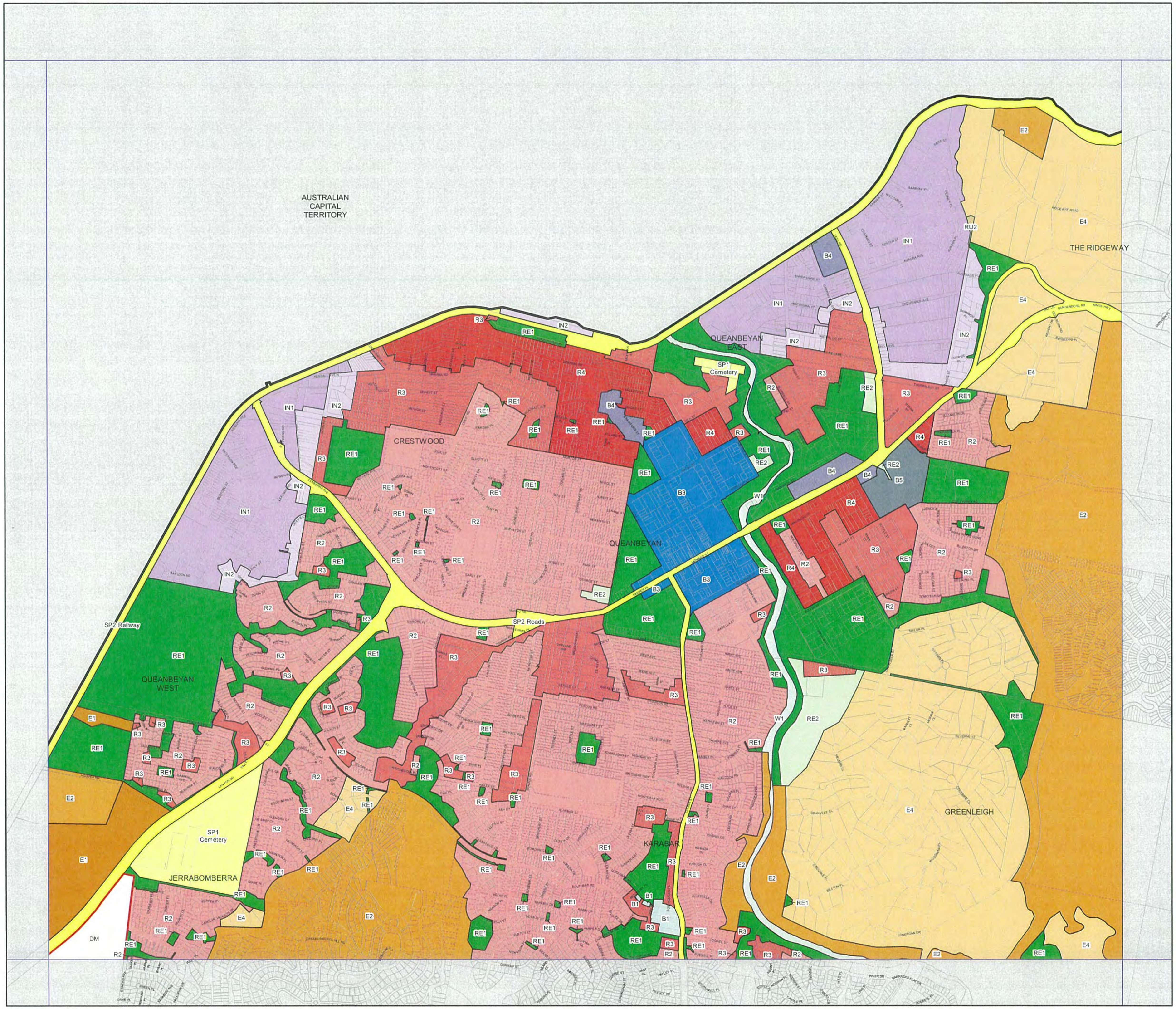


Queanbeyan Local Environmental Plan 2012

Queanbeyan City Council

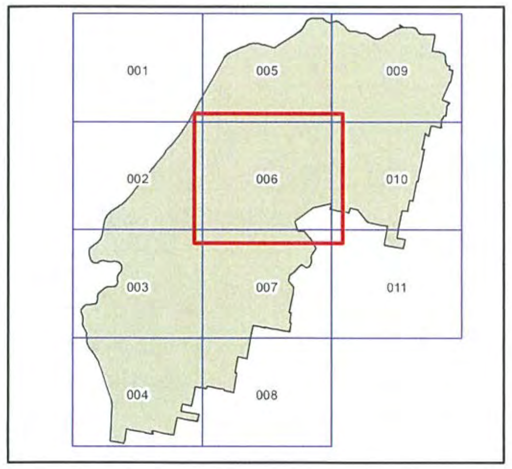
Land Zoning Map - Sheet LZN_006

Zone

B1	Neighbourhood Centre
B2	Local Centre
B3	Commercial Core
B4	Mixed Use
B5	Business Development
E1	National Parks and Nature Reserves
E2	Environmental Conservation
E3	Environmental Management
E4	Environmental Living
IN1	General Industrial
IN2	Light Industrial
R1	General Residential
R2	Low Density Residential
R3	Medium Density Residential
R4	High Density Residential
R5	Large Lot Residential
RE1	Public Recreation
RE2	Private Recreation
RU2	Rural Landscape
SP1	Special Activities
SP2	Infrastructure
W1	Natural Waterways
DM	Deferred Matter

Cadastre

Cadastre 29/08/18 © Spatial Services



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Scale: 1:20,000 @ A3

Projection: GDA 94
MGA Zone 55

Map Identification Number:
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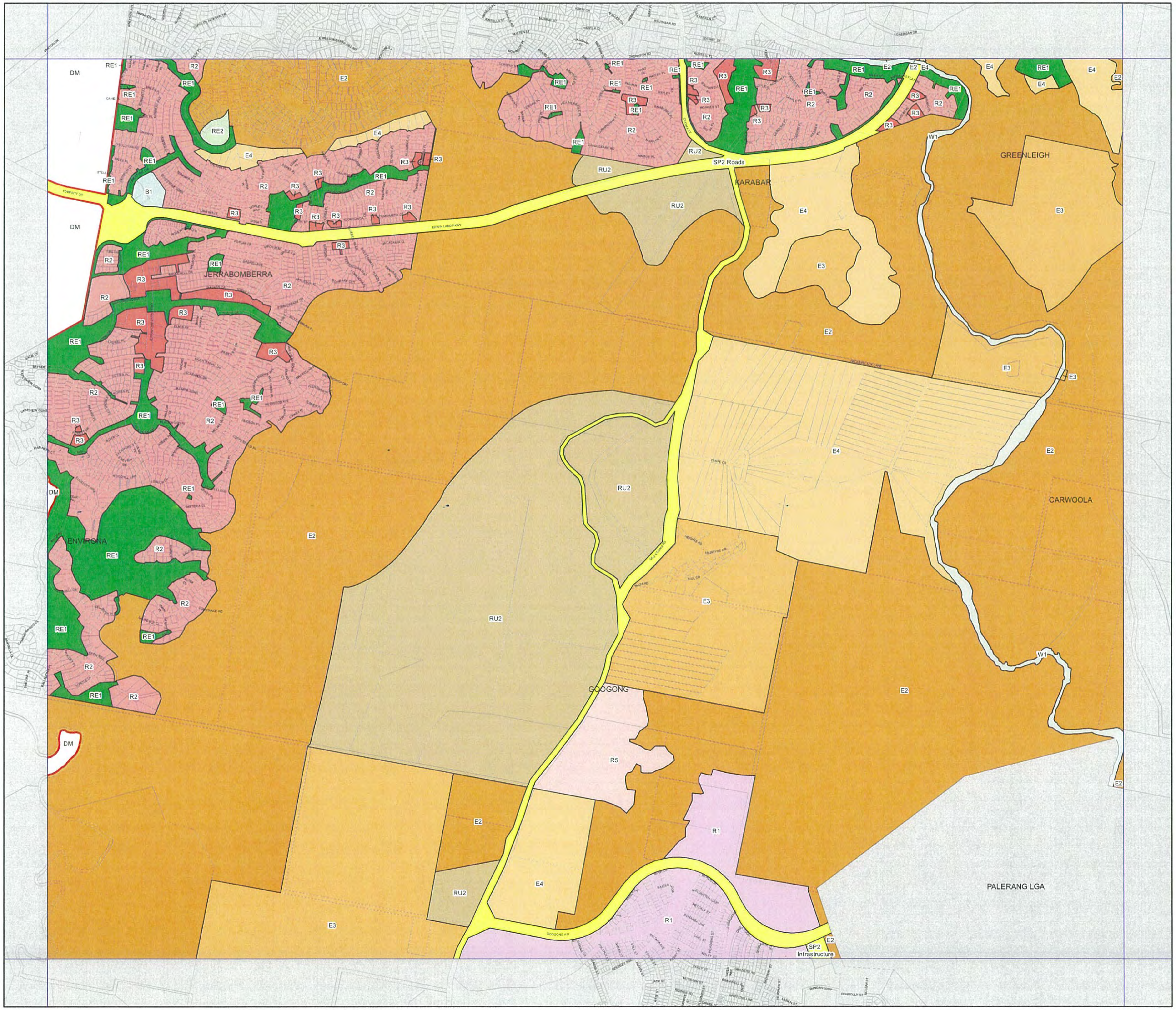


Queanbeyan City Council

Queanbeyan Local Environmental Plan 2012

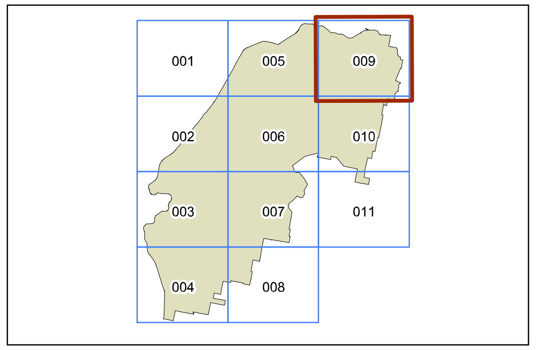
Land Zoning Map - Sheet LZN_009

Zone

	Zone
B1	Neighbourhood Centre
B2	Local Centre
B3	Commercial Core
B4	Mixed Use
B5	Business Development
E1	National Parks and Nature Reserves
E2	Environmental Conservation
E3	Environmental Management
E4	Environmental Living
IN1	General Industrial
IN2	Light Industrial
R1	General Residential
R2	Low Density Residential
R3	Medium Density Residential
R4	High Density Residential
R5	Large Lot Residential
RE1	Public Recreation
RE2	Private Recreation
RU2	Rural Landscape
SP1	Special Activities
SP2	Infrastructure
W1	Natural Waterways
DM	Deferred Matter

Cadastre

Cadastre 01/08/2015 © Land and Property Information (LPI)



N
W E
S

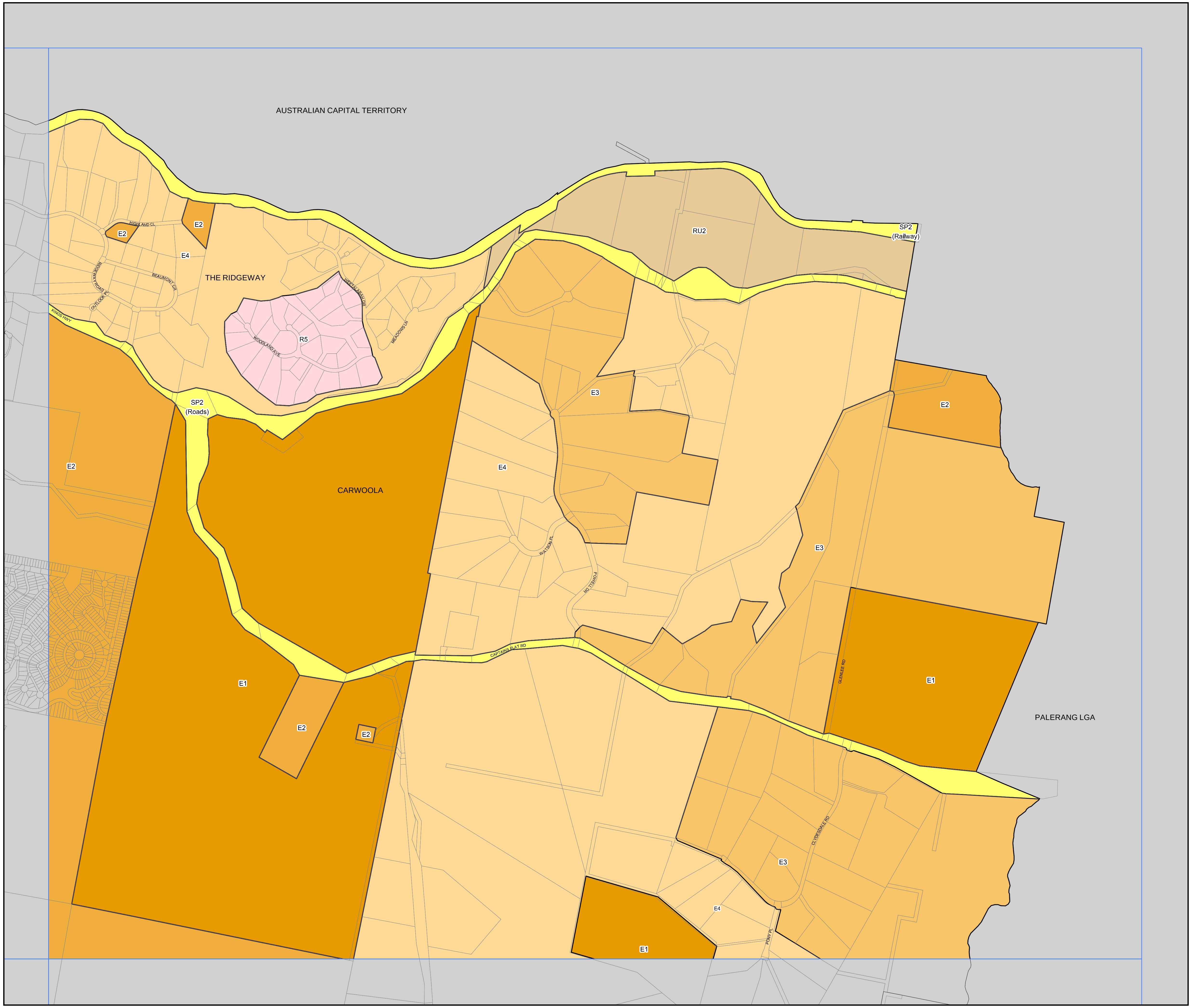
Projection: GDA 1994 Zone 55

0 250 500
METRES

Scale 1: 20000 @ A3

Map Identification Number:

6470_COM_LZN_009_020_20150818



Queanbeyan Local Environmental Plan 2012

Queanbeyan City Council

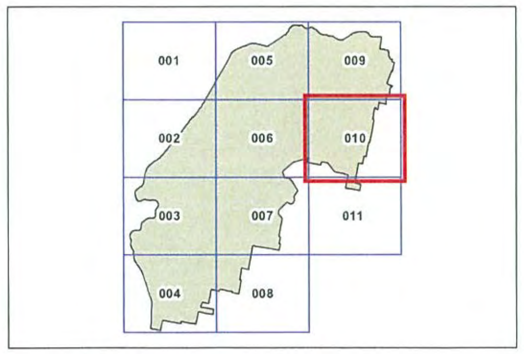
Land Zoning Map - Sheet LZN_010

Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B3 Commercial Core
- B4 Mixed Use
- B5 Business Development
- E1 National Parks and Nature Reserves
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living
- IN1 General Industrial
- IN2 Light Industrial
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU2 Rural Landscape
- SP1 Special Activities
- SP2 Infrastructure
- W1 Natural Waterways
- DM Deferred Matter

Cadastre

Cadastre 06/06/2012 © Land and Property Information (LPI)



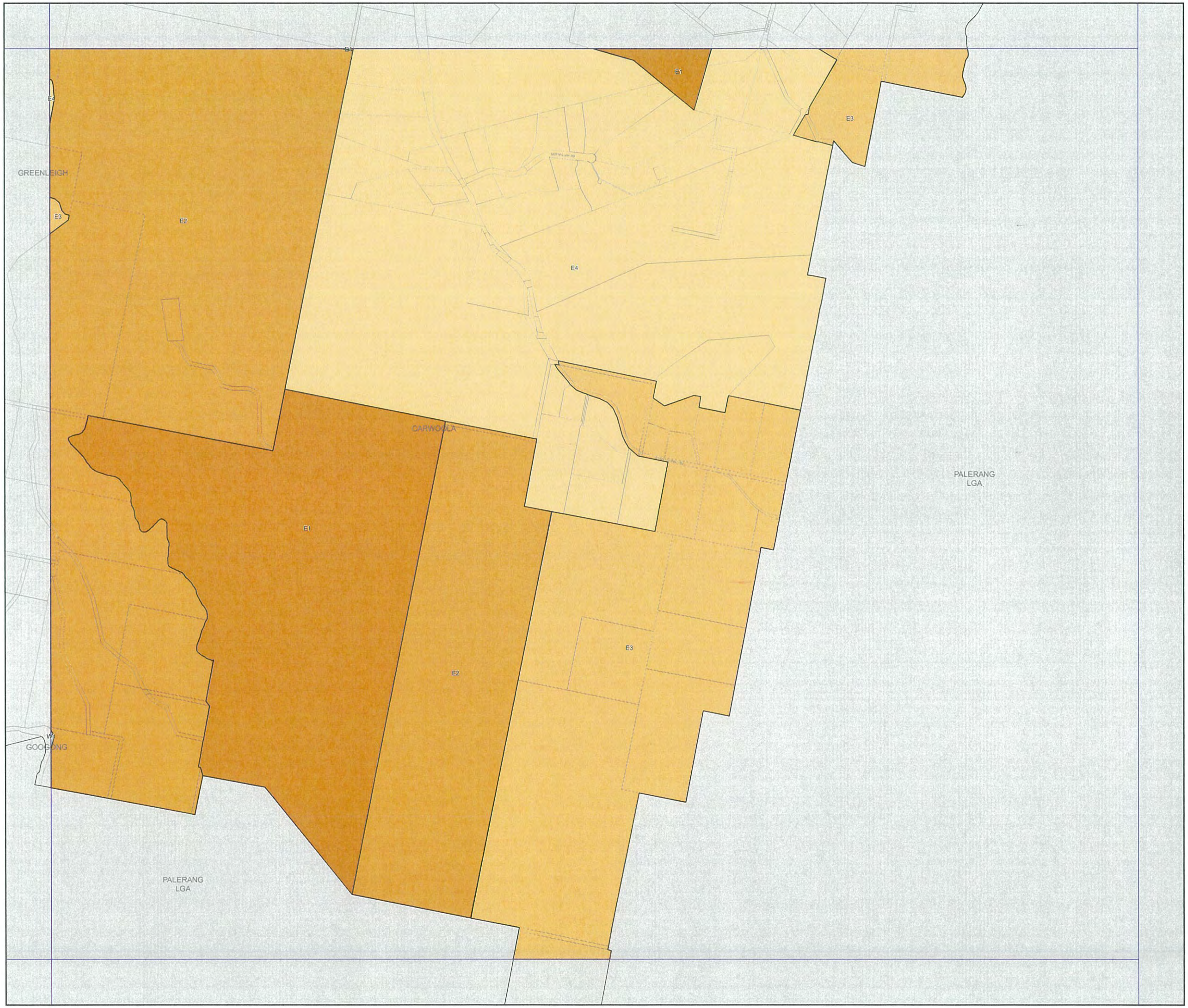
N

0 200 400 600 Metres

Scale:1:20,000 @ A3

Projection: GDA 1994
MGA Zone 55

Map identification number:
6470_COM_LZN_010_020_20120919



Background

A strategy to systematically prioritise, assess and respond to notifications under Section 60 of the ***Contaminated Land Management Act 1997*** (CLM Act) has been developed by the EPA. This strategy acknowledges the EPA's obligations to make information available to the public under ***Government Information (Public Access) Act 2009***.

When a site is notified to the EPA, it may be accompanied by detailed site reports where the owner has been proactive in addressing the contamination and its source. However, often there is minimal information on the nature or extent of the contamination.

After receiving a report, the first step is to confirm that the report does not relate to a pollution incident. The Protection of the Environment Operations Act 1997 (POEO Act) deals with pollution incidents, waste stockpiling or dumping. The EPA also has an incident management process to manage significant incidents (https://www.epa.nsw.gov.au/reporting-and-incidents/incident-management).

In many cases, the information indicates the contamination is securely immobilised within the site, such as under a building or carpark, and is not currently causing any significant risks for the community or environment. Such sites may still need to be cleaned up, but this can be done in conjunction with any subsequent building or redevelopment of the land. These sites do not require intervention under the CLM Act, and are dealt with through the planning and development consent process. In these cases, the EPA informs the local council or other planning authority, so that the information can be recorded and considered at the appropriate time (https://www.epa.nsw.gov.au/your-environment/contaminated-land/managing-contaminated-land/role-of-planning-authorities).

Where indications are that the contamination could cause actual harm to the environment or an unacceptable offsite impact (i.e. the land is 'significantly contaminated'), the EPA would apply the regulatory provisions of the CLM Act to have the responsible polluter and/or landowner investigate and remediate the site. If the reported contamination could present an immediate or long-term threat to human health NSW Health will be consulted. SafeWork NSW and Water NSW can also be consulted if there appear to be occupational health and safety risks or an impact on groundwater quality.

As such, the sites notified to the EPA and presented in the list of contaminated sites notified to the EPA are at various stages of the assessment and remediation process. Understanding the nature of the underlying contamination, its implications and implementing a remediation program where required, can take a considerable period of time. The list provides an indication, in relation to each nominated site, as to the management status of that particular site. Further detailed information may be available from the EPA or the person who notified the site.

The following questions and answers may assist those interested in this issue.

Frequently asked questions

Why does my land appear on the list of notified sites?

Your land may appear on the list because:

- the site owner and/or the polluter has notified the EPA under section 60 of the CLM Act
- the EPA has been notified via other means and is satisfied that the site is or was contaminated.

If a site is on the list, it does not necessarily mean the contamination is significant enough to regulate under the CLM Act.

Does the list contain all contaminated sites in NSW?

No. The list only contains contaminated sites that EPA is aware of. If a site is not on the list, it does not necessarily mean the site is not contaminated.

The EPA relies on responsible parties and the public to notify contaminated sites.

How are notified contaminated sites managed by the EPA?

There are different ways the EPA can manage notified contaminated sites. Options include:

• regulation under the CLM Act, POEO Act, or both
• notifying the relevant planning authority for management under the planning and development process
• managing the site under the Protection of the Environment Operation (Underground Petroleum Storage Systems) Regulation 2014.

There are specific cases where contamination is managed under a tailored program operated by another agency (for example, the Resources & Geoscience's Legacy Mines Program).

What should I do if I am a potential buyer of a site that appears on the list?

You should seek advice from the seller to understand the contamination issue. You may need to seek independent contamination or legal advice.

The information provided in the list is indicative only and a starting point for your own assessment. Land contamination from past site uses is common, mainly in urban environments. If the site is properly remediated or managed, it may not affect the intended future use of the site.

Who can I contact if I need more information about a site?

You can contact the Environment Line at any time by calling 131 555 or by emailing info@environment.nsw.gov.au.

List of NSW Contaminated Sites Notified to the EPA

Disclaimer

The EPA has taken all reasonable care to ensure that the information in the list of contaminated sites notified to the EPA (the list) is complete and correct. The EPA does not, however, warrant or represent that the list is free from errors or omissions or that it is exhaustive.

The EPA may, without notice, change any or all of the information in the list at any time.

You should obtain independent advice before you make any decision based on the information in the list.

The list is made available on the understanding that the EPA, its servants and agents, to the extent permitted by law, accept no responsibility for any damage, cost, loss or expense incurred by you as a result of:

1. any information in the list; or
2. any error, omission or misrepresentation in the list; or
3. any malfunction or failure to function of the list;
4. without limiting (2) or (3) above, any delay, failure or error in recording, displaying or updating information.

Site Status	Explanation
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or *Protection of the Environment Operations Act 1997* .
Under Preliminary Investigation Order	The EPA has issued a Preliminary Investigation Order under s10 of the *Contaminated Land Management Act 1997* , to obtain additional information needed to complete the assessment.
Regulation under CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the *Contaminated Land Management Act 1997* is not required.

Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the *Contaminated Land Management Act 1997* . A regulatory approach is being finalised.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record.
Contamination currently regulated under POEO Act	Contamination is currently regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA as the appropriate regulatory authority reasonably suspects that a pollution incident is occurring/ has occurred and that it requires regulation under the POEO Act. The EPA may use environment protection notices, such as clean up notices, to require clean up action to be taken. Such regulatory notices are available on the POEO public register.
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the *Environmental Planning and Assessment Act 1979* (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the *Contaminated Land Management Act 1997* (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the *Protection of the Environment Operations Act 1997* (POEO Act).

Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the *Environmental Planning and Assessment Act 1979* (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record.

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
GERRINGONG	Gerringong Cooperative	18 Belinda STREET	Other Petroleum	Regulation under CLM Act not required	-34.74518835	150.8181054
GILGANDRA	United (Former Mobil) Service Station	13 Castlereagh STREET	Service Station	Regulation under CLM Act not required	-31.71715641	148.6581574
GILGANDRA	Former Mobil Depot	2 Federation STREET	Other Petroleum	Regulation under CLM Act not required	-31.70937362	148.6522102
GILGANDRA	Former Mobil Depot	20 Federation STREET	Other Petroleum	Regulation under CLM Act not required	-31.70771744	148.6514198
GILGANDRA	Caltex Service Station Gilgandra	6425 Newell HIGHWAY	Service Station	Regulation under CLM Act not required	-31.72545524	148.65281
GILLENBAH	Caltex (Former Mobil) Narrandera Service Station	16321 - 16335 Newell HIGHWAY	Service Station	Regulation under CLM Act not required	-34.76124219	146.5398604
GIRRAWEEN	Industrial Galvanizers site	20-22 Amax AVENUE	Metal Industry	Contamination currently regulated under POEO Act	-33.80500693	150.9396743
GIRRAWEEN	Caltex Pendle Hill Service Station Girraween	602 Great Western HIGHWAY	Service Station	Regulation under CLM Act not required	-33.80827518	150.9421511
GLADESVILLE	Caltex Service Station	287-295 Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.8285374	151.1268639
GLADESVILLE	Road Reserve	Pittwater ROAD	Other Industry	Regulation under CLM Act not required	-33.81603924	151.1355085
GLADESVILLE	Caltex Service Station	116 Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.83575319	151.1277863
GLADESVILLE	Glade View Business Park	436-484 Victoria ROAD	Other Industry	Under assessment	-33.82382382	151.1223941
GLEBE	The Hill and Jubilee Embankment	12 Maxwell ROAD	Other Industry	Regulation under CLM Act not required	-33.87573032	151.1776027
GLEN INNES	Ambulance Station	106 Bourke STREET	Unclassified	Regulation under CLM Act not required	-29.73805854	151.7313138
GLEN INNES	Telstra Depot Glen Innes	126 Lambeth STREET	Unclassified	Regulation under CLM Act not required	-29.73565341	151.7278271
GLEN INNES	Caltex Glen Innes Service Station	Meade Street, corner Church STREET	Service Station	Regulation under CLM Act not required	-29.73699014	151.7379335

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
GLEN INNES	Former Shell Depot	Lambeth STREET	Other Petroleum	Regulation under CLM Act not required	-29.7376309	151.7276309
GLEN INNES	Former Caltex Depot, Glen Innes	Lot 1 DP785636 Lambeth STREET	Other Petroleum	Regulation under CLM Act not required	-29.73525485	151.7279167
GLEN INNES	Council-owned Laneway	Lot 2 Lang STREET	Gasworks	Regulation under CLM Act not required	-29.74385432	151.7323049
GLEN INNES	Caltex Service Station	Cnr Taylor Street & Church STREET	Service Station	Regulation under CLM Act not required	-29.73289036	151.739653
GLEN INNES	Caltex Glen Innes Paddock	9979 New England HIGHWAY	Service Station	Regulation under CLM Act not required	-29.75608853	151.7344106
GLENBROOK	Caltex Service Station Glenbrook	78 Great Western HIGHWAY	Service Station	Regulation under CLM Act not required	-33.76545234	150.6215447
GLENDALE	Coles Express Glendale	593 Main ROAD	Service Station	Regulation under CLM Act not required	-32.92709242	151.637946
GLENDALE	Settlement Pond	65 Glendale DRIVE	Unclassified	Regulation under CLM Act not required	-32.93411399	151.6483695
GLENDALE	Former Service Station	334-342 Lake ROAD	Unclassified	Regulation under CLM Act not required	-32.92775076	151.6433463
GLENDALE	Woolworths Service Station	Stockland DRIVE	Service Station	Regulation under CLM Act not required	-32.93250548	151.6404097
GLENDENNING	7-Eleven Plumpton Service Station Glendenning	1 Dublin Street, corner Richmond ROAD	Service Station	Regulation under CLM Act not required	-33.73988232	150.8603323
GLENORIE	Caltex Glenorie Service Station	912 Old Northern ROAD	Service Station	Regulation under CLM Act not required	-33.60550946	151.0126731
GLENTHORNE	Caltex Taree Service Station	Manning River DRIVE	Service Station	Regulation under CLM Act not required	-31.94415251	152.4703511
GLOUCESTER	Caltex Service Station	141 Church STREET	Service Station	Regulation under CLM Act not required	-32.01222514	151.9579521
GOOLMANGAR	Goolmangar General Store	851 Nimbin ROAD	Service Station	Regulation under CLM Act not required	-28.74694441	153.225401
GOONELLABAH	Former Invercauld Road Cattle Dip	161 Invercauld ROAD	Cattle Dip	Contamination formerly regulated under the CLM Act	-28.8308417	153.3098878

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
GOSFORD	United (former Mobil) Depot	Corner Merinee Road and Bowen CRESCENT	Other Petroleum	Regulation under CLM Act not required	-33.41523225	151.3257069
GOULBURN	Former Goulburn Gasworks	1 Blackshaw ROAD	Gasworks	Contamination currently regulated under CLM Act	-34.75237525	149.725507
GOULBURN	Goulburn Tannery	13 Gibson STREET	Other Industry	Regulation under CLM Act not required	-34.73756525	149.72059
GOULBURN	Caltex Depot	13 Sloane STREET	Other Petroleum	Regulation under CLM Act not required	-34.77423152	149.7088626
GOULBURN	Metro Goulburn Depot	23 Braidwood ROAD	Other Petroleum	Regulation under CLM Act not required	-34.76217302	149.7170897
GOULBURN	Caltex Service Station	72-74 Clinton STREET	Service Station	Regulation under CLM Act not required	-34.75728157	149.7135824
GOULBURN	Caltex Service Station	68 Goldsmith STREET	Service Station	Regulation under CLM Act not required	-34.75054432	149.7192098
GOULBURN	Former Shell Autoport Service Station	Corner Bruce Street and Lagoon STREET	Service Station	Regulation under CLM Act not required	-34.74807885	149.7266246
GOULBURN	Coles Express Service Station	90 Cowper (Corner Clinton Street) STREET	Service Station	Regulation under CLM Act not required	-34.75566648	149.7107831
GOULBURN	Mobil Service Station	129 Lagoon STREET	Service Station	Contamination formerly regulated under the CLM Act	-34.74618793	149.7330484
GOULBURN	Caltex Service Station	315 Auburn, corner Bradley STREET	Service Station	Regulation under CLM Act not required	-34.74942293	149.7232692
GOULBURN	Former Mobil Service Station Goulburn	422-426 Auburn STREET	Service Station	Regulation under CLM Act not required	-34.74869879	149.7229392
GRAFTON	Former General Store and Service Station Grafton	161 Turf STREET	Service Station	Regulation under CLM Act not required	-29.67412811	152.9336609
GRAFTON	Lowes Petroleum (BP-Branded) Depot, Grafton	13 Orara STREET	Other Petroleum	Regulation under CLM Act not required	-29.67016421	152.918161
GRAFTON	Former Shell Depot	2 Milton STREET	Other Petroleum	Regulation under CLM Act not required	-29.67723019	152.9205374
GRAFTON	Grafton Works Depot	26-28 Bruce STREET	Other Petroleum	Regulation under CLM Act not required	-29.67975507	152.9249357

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
GRAFTON	Former BP Service Station (Reliance Petroleum)	202 Queen STREET	Service Station	Regulation under CLM Act not required	-29.67645469	152.9423977
GRAFTON	Woolworths Petrol	75 - 77 Fitzroy Street Cnr of Duke STREET	Service Station	Regulation under CLM Act not required	-29.69221713	152.9343562
GRAFTON	Caltex Service Station	Corner Villiers St and Fitzroy STREET	Service Station	Regulation under CLM Act not required	-29.69296308	152.9366431
GRAFTON	BP Service Station (Reliance Petroleum)	14 Villiers (Cnr Fitzroy) STREET	Service Station	Regulation under CLM Act not required	-29.69345456	152.9373123
GRAFTON	Former Mobil Depot Grafton	2-16 Bruce STREET	Other Petroleum	Regulation under CLM Act not required	-29.68093591	152.9231289
GRAFTON	Caltex Service Station	179 Prince STREET	Service Station	Regulation under CLM Act not required	-29.68600117	152.9371093
GRANVILLE	Caltex Service Station	144 Parramatta ROAD	Service Station	Regulation under CLM Act not required	-33.83039605	151.0109216
GRANVILLE	Australand	15-17 Berry STREET	Other Industry	Regulation under CLM Act not required	-33.83600073	151.0211988
GRANVILLE	Woolworths Service Station Granville	158 Clyde STREET	Service Station	Regulation under CLM Act not required	-33.84623338	151.0124885
GRANVILLE	Commercial Property	2B Factory STREET	Other Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.84173556	151.0165687
GRANVILLE	Old Granville Depot	23 Elizabeth STREET	Unclassified	Regulation under CLM Act not required	-33.83765925	151.008528
GRANVILLE	7-Eleven Service Station	154-160 Parramatta ROAD	Service Station	Regulation under CLM Act not required	-33.83022685	151.0101322
GRANVILLE	A'Becketts Creek	Albert STREET	Unclassified	Under assessment	-33.82735397	151.0113643
GREENACRE	Former Plating Works	12 Claremont STREET	Unclassified	Regulation under CLM Act not required	-33.89992254	151.0386128
GREENACRE	7-Eleven (former Mobil) Service Station	301-305 Hume HIGHWAY	Service Station	Regulation under CLM Act not required	-33.90524488	151.0419971
GREENACRE	Caltex Service Station	87 - 91 Roberts ROAD	Service Station	Regulation under CLM Act not required	-33.90461089	151.0648581

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
GREENACRE	Coles Greenacre	13-19 Boronia ROAD	Other Industry	Regulation under CLM Act not required	-33.9061123	151.0561759
GREENWICH	Gore Creek Reserve - Drainage Line	St Vincents ROAD	Other Industry	Regulation under CLM Act not required	-33.82888693	151.1819101
GRENFELL	Former SRA Fuel Depot	Grafton STREET	Other Petroleum	Regulation under CLM Act not required	-33.89351237	148.1560188
GRENFELL	Grenfell Gasworks	Corner Gooloogong Road & Bourke STREET	Gasworks	Regulation under CLM Act not required	-33.89006016	148.1615443
GRETA	Coles Express Greta	122 New England HIGHWAY	Service Station	Regulation under CLM Act not required	-32.67656357	151.3872818
GRETA	redevelopment site	112-114 High STREET	Other Industry	Regulation under CLM Act not required	-32.67706709	151.3876682
GRETA	Former landfill	Hollingshed ROAD	Landfill	Regulation under CLM Act not required	-32.66705287	151.3923474
GREYSTANES	Metro Branded (former Mobil) Service Station	73 Ettalong ROAD	Service Station	Regulation under CLM Act not required	-33.81822648	150.9513946
GRIFFITH	Liberty Depot (former Shell CVRO) Griffith	6-10 Mackay AVENUE	Other Petroleum	Regulation under CLM Act not required	-34.2910045	146.063824
GRIFFITH	Former Murrumbidgee Irrigation Depot	55-77 Banna AVENUE	Other Industry	Regulation under CLM Act not required	-34.28858242	146.0567509
GRIFFITH	Mobil Depot - Griffith Airport	Off Rememberance DRIVE	Other Petroleum	Regulation under CLM Act not required	-34.25618872	146.0620449
GRIFFITH	Former Ampol Depot	32-34 Mackay AVENUE	Other Petroleum	Regulation under CLM Act not required	-34.2933331	146.0679503
GRIFFITH	Caltex Service Station and Depot	2-4 Mackay AVENUE	Service Station	Regulation under CLM Act not required	-34.2908766	146.0630815
GRIFFITH	Former Landmark Fertiliser Storage Facility	2-8 Jensen ROAD	Chemical Industry	Regulation under CLM Act not required	-34.29365599	146.0536413
GRIFFITH	Belford Petroleum (former Mobil) Depot	30 Banna AVENUE	Service Station	Regulation under CLM Act not required	-34.29042827	146.0595497
GRIFFITH	Former BP Service Station (Reliance Petroleum)	81 Banna AVENUE	Service Station	Regulation under CLM Act not required	-34.28851251	146.0540815

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
GUILDFORD	7-Eleven Service Station Guildford West	176 Fowler ROAD	Service Station	Regulation under CLM Act not required	-33.85149493	150.9722491
GULGONG	Lowes Petroleum (former BP) Depot Gulgong	6 Railway STREET	Other Petroleum	Regulation under CLM Act not required	-32.35950625	149.5461499
GULGONG	The Oval Site	Queen STREET	Unclassified	Regulation under CLM Act not required	-32.36169815	149.531075
GULMARRAD	BP Service Station Maclean	3976 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-29.48537407	153.2004311
GUMLY GUMLY	Caltex Service Station	3723 Sturt HIGHWAY	Service Station	Regulation under CLM Act not required	-35.13590309	147.4424551
GUMLY GUMLY	Brick Kiln Reserve	Eunony Bridge ROAD	Landfill	Regulation under CLM Act not required	-35.12098411	147.4196309
GUNDAGAI	Former Mobil Depot	98 Mount STREET	Other Petroleum	Regulation under CLM Act not required	-35.08206783	148.096221
GUNNEDAH	Caltex Service Station	21 Abbott STREET	Service Station	Regulation under CLM Act not required	-30.98021001	150.2561856
GUNNEDAH	Former Shell Depot Gunnedah	85-89 Barber STREET	Other Petroleum	Regulation under CLM Act not required	-30.97949284	150.2507401
GUNNEDAH	Mobil Gunnedah Depot	16-24 Wentworth STREET	Other Petroleum	Regulation under CLM Act not required	-30.98428725	150.260609
GUNNEDAH	BP Depot Gunnedah	103 Mathias ROAD	Other Petroleum	Contamination currently regulated under CLM Act	-30.96665001	150.2326526
GUNNEDAH	BP Service Station	Corner Conadilly Street & Henry STREET	Service Station	Contamination formerly regulated under the CLM Act	-30.98116266	150.2583066
GUNNEDAH	Mobil Service Station	341 Conadilly STREET	Service Station	Contamination formerly regulated under the CLM Act	-30.9807394	150.2578428
GUNNEDAH	Property NSW Site	35-37 Abbott STREET	Other Petroleum	Regulation under CLM Act not required	-30.9789841	150.25737
GUNNEDAH	Former Telstra Line Depot	81 Barber STREET	Other Petroleum	Regulation under CLM Act not required	-30.97933809	150.2503121
GUNNEDAH	Adjacent to Service Station	Intersection of Henry Street and Conadilly STREET	Service Station	Contamination formerly regulated under the CLM Act	-30.98072588	150.2582802

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
JENNINGS	Jennings Former Arsenic Poison Factory	Duke Street, Manor Street, and Ballandean STREET	Chemical Industry	Contamination currently regulated under CLM Act	-28.929342	151.9298622
JENNINGS	United Jennings Service Station	1823 New England HIGHWAY	Service Station	Regulation under CLM Act not required	-28.9323235	151.9260334
JESMOND	Caltex Service Station	27 Bluegum ROAD	Service Station	Regulation under CLM Act not required	-32.9029287	151.691164
JINDABYNE	BP Service Station (Reliance Petroleum)	8 Kosciuszko ROAD	Service Station	Regulation under CLM Act not required	-36.41478692	148.6178882
JINDABYNE	Caltex Service Station	50 Kosciuszko ROAD	Service Station	Regulation under CLM Act not required	-36.41395847	148.6225113
JINGELLIC	Former Jingellic School	3179 River ROAD	Other Industry	Regulation under CLM Act not required	-35.926501	147.701011
JUNEE	Subdivision Proposal	5858 Gundagai ROAD	Unclassified	Regulation under CLM Act not required	-34.87783587	147.6067578
JUNEE	United Junee Service Station	No. 118-134 BROADWAY	Service Station	Regulation under CLM Act not required	-34.86805686	147.583483
JUNEE	Junee Railway Workshops	92 Harold STREET	Other Industry	Under assessment	-34.88393	147.579631
KANAHOOKA	Former Dapto Smelter Site, Kanahooka (redeveloped)	Off Kanahooka ROAD	Metal Industry	Regulation under CLM Act not required	-34.4941348	150.8224482
KANDOS	Cement Australia Kandos Cement Works	1 Jamison STREET	Other Industry	Regulation under CLM Act not required	-32.86399912	149.9779259
KANWAL	Kanwal General Store and Fuel Supplies and Adjacent Land	68 and part of 70 Craigie AVENUE	Service Station	Contamination currently regulated under CLM Act	-33.263026	151.482125
KANWAL	Former Bus and Truck Rental Yard	645-647 Pacific Highway HIGHWAY	Other Petroleum	Regulation under CLM Act not required	-33.26233802	151.4825469
KARIONG	Coles Express Kariong	6 Central Coast HIGHWAY	Service Station	Regulation under CLM Act not required	-33.43443192	151.2963401
KARIONG	Caltex Service Station	Lot 2 Langford DRIVE	Service Station	Regulation under CLM Act not required	-33.43934827	151.2935447
KARUAH	BP Roadhouse Karuah	403 Tarean ROAD	Service Station	Regulation under CLM Act not required	-32.65371781	151.9629963

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
KATOOMBA	Aldi Stores	201 Katoomba STREET	Service Station	Regulation under CLM Act not required	-33.71756625	150.3101649
KATOOMBA	Former Katoomba/Leura Gasworks	Megalong STREET	Gasworks	Contamination currently regulated under CLM Act	-33.71318559	150.3187284
KELLYVILLE	Caltex Service Station	3-5 Windsor ROAD	Service Station	Regulation under CLM Act not required	-33.71436125	150.9602175
KELLYVILLE	BP Service Station Kellyville	19-23 Windsor ROAD	Service Station	Regulation under CLM Act not required	-33.71280997	150.9590756
KELSO	Caltex Service Station Kelso	19 Sydney ROAD	Service Station	Regulation under CLM Act not required	-33.41904247	149.6023985
KELSO	BP Service Station (Reliance Petroleum)	63 Sydney ROAD	Service Station	Regulation under CLM Act not required	-33.41925328	149.6076677
KEMBLA GRANGE	ShawCor Australia	66 West Dapto ROAD	Other Petroleum	Regulation under CLM Act not required	-34.46875328	150.8106326
KEMBLAWARRA	Griffins Bay, Lake Illawarra	Shellharbour ROAD	Landfill	Regulation under CLM Act not required	-34.49653984	150.8943776
KEMPS CREEK	Caltex-branded Service Station	1163 Mamre ROAD	Service Station	Regulation under CLM Act not required	-33.86972102	150.7966074
KEMPSEY	Kempsey Showground	19 Sea STREET	Unclassified	Contamination being managed via the planning process (EP&A Act)	-31.07334836	152.8308795
KEMPSEY	Former Shell Depot	43-51 Gladstone STREET	Other Petroleum	Regulation under CLM Act not required	-31.07500944	152.8346699
KEMPSEY	Former Mobil Depot	14 Hopetoun STREET	Other Petroleum	Regulation under CLM Act not required	-31.07603107	152.8350132
KEMPSEY	Shell Coles Express Service Station Kempsey	165 Smith STREET	Service Station	Regulation under CLM Act not required	-31.07036743	152.8461571
KEMPSEY	Mobil Depot	154 Belgrave STREET	Service Station	Regulation under CLM Act not required	-31.07965043	152.8326303
KEMPSEY	Liberty (Former Mobil) Service Station	108-112 Smith STREET	Service Station	Regulation under CLM Act not required	-31.07492508	152.8431945
KENSINGTON	7-Eleven Kensington	135 Anzac PARADE	Service Station	Regulation under CLM Act not required	-33.91035885	151.2228537

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
KENSINGTON	Former Ampol Service Station	76-82 Anzac PARADE	Service Station	Regulation under CLM Act not required	-33.9059246	151.2242891
KENSINGTON	Footpath adjacent to 10-20 Anzac Parade	10-20 Anzac PARADE	Service Station	Regulation under CLM Act not required	-33.9032124	151.2237836
KENSINGTON	Caltex Service Station	211-213 Anzac PARADE	Service Station	Regulation under CLM Act not required	-33.91460752	151.2251266
KENTHURST	Vacant Land	259 McCylmonts ROAD	Unclassified	Regulation under CLM Act not required	-33.61283529	150.9425303
KHANCOBAN	Khancoban Tip	Alpine WAY	Landfill	Regulation under CLM Act not required	-36.21994191	148.1542718
KIAMA	Former Gasworks	105 to 109 and 113 Shoalhaven STREET	Gasworks	Regulation under CLM Act not required	-34.67416881	150.8504143
KIAMA HEIGHTS	Former Mobil Service Station Kiama	7-9 South Kiama DRIVE	Service Station	Regulation under CLM Act not required	-34.69553931	150.8437977
KILLARA	7-Eleven Service Station (Former Mobil)	496 Pacific HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-33.77146554	151.1606903
KILLARA	Former Caltex Service Station	692B-694 Pacific HIGHWAY	Service Station	Contamination formerly regulated under the CLM Act	-33.76306802	151.1550109
KILLARA	Killara Garage	544 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.76974164	151.1599696
KILLARA	Former BP Service Station Lindfield	478 Pacific HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-33.7719298	151.1613874
KILLARA	Land Adjacent to Former Service Station Site	684-684a, 690, 692 and 696 Pacific HIGHWAY	Service Station	Contamination formerly regulated under the CLM Act	-33.76312226	151.1549237
KINCUMBER	Frost Reserve	Avoca DRIVE	Landfill	Contamination currently regulated under CLM Act	-33.47065695	151.3909044
KINGS PARK	Multi-Fill	14 Garling ROAD	Chemical Industry	Under assessment	-33.74478046	150.9111964
KINGS PARK	Former Dow Corning Factory	21 Tattersall ROAD	Chemical Industry	Regulation under CLM Act not required	-33.75012653	150.9138477
KINGSFORD	Caltex Service Station	603-611 Anzac PARADE	Service Station	Regulation under CLM Act not required	-33.93435787	151.2371198

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
KINGSFORD	Coles Express Service Station Kingsford	58 Gardeners ROAD	Service Station	Regulation under CLM Act not required	-33.9250054	151.2257601
KINGSGROVE	Shell Coles Express Service Station	137 Kingsgrove ROAD	Service Station	Regulation under CLM Act not required	-33.93276948	151.099026
KINGSGROVE	Caltex Kingsgrove	351-357 Stoney Creek ROAD	Service Station	Regulation under CLM Act not required	-33.95132175	151.0926872
KINGSGROVE	State Transit Authority Depot	17-23 Richland STREET	Other Petroleum	Regulation under CLM Act not required	-33.93646086	151.0973617
KIRRAWEE	Ingal Civil Products	127-141 Bath ROAD	Metal Industry	Regulation under CLM Act not required	-34.03029516	151.0754469
KIRRAWEE	7-Eleven (former Mobil) Service Station	542-546 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-34.03238179	151.0758071
KIRRAWEE	Caltex-branded Kirrawee Service Station	(1-3 Waratah Street) 487 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-34.02915971	151.0808279
KOGARAH	Scarborough Park South	184R Production AVENUE	Landfill	Regulation being finalised	-33.97922253	151.140276
KOGARAH	Caltex Service Station	29 President AVENUE	Service Station	Regulation under CLM Act not required	-33.96516866	151.141145
KOGARAH	7-Eleven Service Station	736 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-33.96406472	151.1376011
KOGARAH	Woolworths Petrol Service Station	69 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-33.96330397	151.1371182
KOOLKHAN	Former Koolkhan Power Station	Summerland WAY	Other Industry	Regulation under CLM Act not required	-29.61688704	152.9300645
KOORAGANG	NPC, berths 2 and 3	Heron ROAD	Metal Industry	Regulation being finalised	-32.89260063	151.7742527
KOORAGANG	Kooragang Island Waste Facility	Off Cormorant ROAD	Metal Industry	Contamination currently regulated under POEO Act	-32.86901125	151.7377773
KOORAGANG	Orica Kooragang Island	15 Greenleaf ROAD	Chemical Industry	Contamination currently regulated under CLM Act	-32.89654619	151.7771372
KOORAGANG	Former Boral Timber Export Facility	16 Heron ROAD	Other Industry	Regulation under CLM Act not required	-32.89710295	151.7739966

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
KOORAGANG	Cleanaway Technical Services	19 Egret STREET	Other Industry	Regulation under CLM Act not required	-32.8812145	151.766282
KOORAGANG	Industrial Facility	39 Heron ROAD	Chemical Industry	Under assessment	-32.89106439	151.7784064
KOORAGANG	Vacant Land	Raven Street and Cormorant ROAD	Unclassified	Regulation under CLM Act not required	-32.88410199	151.7701334
KOORAGANG	Linx Logistics	240 Cormorant ROAD	Other Industry	Regulation under CLM Act not required	-32.87480951	151.7757352
KOORINGAL	Former Shell Wagga Depot	11-15 Lake Albert ROAD	Other Petroleum	Regulation under CLM Act not required	-35.12273113	147.3786005
KOORINGAL	Caltex Service Station	265-267 Lake Albert ROAD	Service Station	Regulation under CLM Act not required	-35.14078443	147.3755442
KOORINGAL	Caltex-branded (former Mobil) Service Station	24 Lake Albert ROAD	Service Station	Regulation under CLM Act not required	-35.12239591	147.3769936
KOSCIUSZKO	Smiggin Holes Snow Clearing Shed	Link ROAD	Landfill	Regulation under CLM Act not required	-36.39098211	148.4304981
KOSCIUSZKO	Khancoban Spoil Dump	Alpine WAY	Landfill	Regulation under CLM Act not required	-36.21982803	148.1527401
KOSCIUSZKO	Sawpit Creek landfill	13km from Jindabyne, off Kosciuszko ROAD	Landfill	Regulation under CLM Act not required	-36.34858097	148.5673374
KURMOND	BP Service Station	501 Bells Line of road ROAD	Service Station	Contamination formerly regulated under the CLM Act	-33.55096662	150.6911676
KURNELL	Former Phillips Imperial Chemicals site	260 Captain Cook DRIVE	Chemical Industry	Regulation under CLM Act not required	-34.02493837	151.1952149
KURNELL	Caltex Kurnell Terminal (refer also to ID23868)	2 Solander STREET	Other Petroleum	Contamination currently regulated under POEO Act	-34.0175214	151.2159572
KURNELL	Abbott Australasia	Captain Cook DRIVE	Chemical Industry	Contamination formerly regulated under the CLM Act	-34.02339937	151.19921
KURNELL	Former Caltex Kurnell Service Station	Corner Captain Cook Drive and Solander STREET	Service Station	Regulation under CLM Act not required	-34.01269846	151.2094347
KURRI KURRI	United Petroleum Service Station Kurri Kurri	279-281 Lang STREET	Service Station	Contamination formerly regulated under the CLM Act	-32.82047175	151.477646

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
KURRI KURRI	Kurri Kurri Smelter	Hart ROAD	Metal Industry	Regulation under CLM Act not required	-32.7873063	151.4828827
KYOGLE	Caltex Service Station	22-24 Summerland WAY	Service Station	Regulation under CLM Act not required	-28.61806766	153.003862
LAKE HAVEN	Caltex Service Station	Goobarabah Ave Cnr Gorokan DRIVE	Service Station	Regulation under CLM Act not required	-33.24337276	151.5065335
LAKEMBA	Former Lakemba Police Station	59 Quigg STREET	Unclassified	Regulation under CLM Act not required	-33.92199239	151.079412
LAKEMBA	Caltex Service Station - Corner Punchbowl Rd and Wangee Rd	81 Wangee ROAD	Service Station	Regulation under CLM Act not required	-33.91153044	151.073306
LAKEMBA	Caltex Service Station	961-967 Canterbury ROAD	Service Station	Regulation under CLM Act not required	-33.92671102	151.0814905
LAMBTON	Caltex Service Station	422 Newcastle ROAD	Service Station	Regulation under CLM Act not required	-32.9095592	151.7109684
LAMBTON	4-26 Verulam Road, Lambton NSW 2299	4-26 Verulam ROAD	Other Industry	Under assessment	-32.911599	151.717604
LANE COVE	7-Eleven Service Station	203 Burns Bay ROAD	Service Station	Regulation under CLM Act not required	-33.81458334	151.1543844
LANE COVE	BP-branded Jasbe Service Station	62-70 Epping ROAD	Service Station	Regulation under CLM Act not required	-33.81108427	151.1641531
LANE COVE	Pacific Power	Sirius ROAD	Other Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.80701776	151.1449658
LANE COVE	Coles Express Service Station Burns Bay	254 Burns Bay ROAD	Service Station	Regulation under CLM Act not required	-33.81719214	151.1518774
LANE COVE	331-335 Burns Bay Road, Lane Cove NSW 2066	331-335 Burns Bay ROAD	Other Industry	Under assessment	-33.821255	151.149445
LANE COVE NORTH	Former Caltex Service Station	428-432 Mowbray ROAD	Service Station	Regulation under CLM Act not required	-33.80804563	151.1721538
LANE COVE NORTH	BP Artarmon Service Station, Lane Cove North	432 Pacific HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-33.8112038	151.175547
LANE COVE WEST	Caltex Lane Cove West	235-245 Burns Bay ROAD	Service Station	Regulation under CLM Act not required	-33.81719214	151.1518774

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
MUSWELLBROOK	Vacant Rail Land	27 Brook STREET	Unclassified	Regulation under CLM Act not required	-32.26346086	150.8873181
MUSWELLBROOK	United Branded (Former Mobil) Service Station Muswellbrook	49-51 Maitland STREET	Service Station	Regulation under CLM Act not required	-32.27218162	150.8900206
MUSWELLBROOK	Former Mobil Depot Muswellbrook	43-51 Ford STREET	Other Petroleum	Regulation under CLM Act not required	-32.2599725	150.887573
MUSWELLBROOK	Woolworths Petrol	72 Brook STREET	Service Station	Regulation under CLM Act not required	-32.26325377	150.8905966
MUSWELLBROOK	Caltex Muswellbrook Service Station	84-86 Maitland STREET	Service Station	Regulation under CLM Act not required	-32.27793094	150.8980938
MUSWELLBROOK	Former Gasworks	Corner Carl Street and Foley STREET	Gasworks	Regulation under CLM Act not required	-32.26672337	150.8935982
MUSWELLBROOK	Bayswater Power Station	New England HIGHWAY	Other Industry	Regulation under CLM Act not required	-32.3954046	150.9502683
MUSWELLBROOK	Former Industrial Site	Lot 89 Rathmore STREET	Other Industry	Regulation under CLM Act not required	-32.30544071	150.8823657
MUSWELLBROOK	Caltex Service Station	12-16 Sydney STREET	Service Station	Regulation under CLM Act not required	-32.26785559	150.8879601
MUSWELLBROOK	Former Caltex Depot	47-50 Victoria STREET	Service Station	Regulation under CLM Act not required	-32.26788823	150.8930609
MUSWELLBROOK	Former Pit Top No. 1 Colliery Muswellbrook Coal	Corner Clendinning Street and Victoria STREET	Other Industry	Regulation under CLM Act not required	-32.27031992	150.9009981
NABIAC	Caltex Service Station Nabiac	3964 Wallanbah (Cnr Wallanbah Rd and Pacific Hwy) ROAD	Service Station	Regulation under CLM Act not required	-32.09864883	152.3754346
NAMBUCCA HEADS	Former Mobil Service Station	6 Bowra STREET	Service Station	Regulation under CLM Act not required	-30.64282127	153.0035884
NARELLAN	Caltex Service Station Narellan	1 George Hunter DRIVE	Service Station	Regulation under CLM Act not required	-34.03963992	150.7432386
NARELLAN	Former Landfill	1 Elyard STREET	Landfill	Regulation under CLM Act not required	-34.043474	150.7393256
NAROOMA	Narooma Service Station	60 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-36.21617955	150.126261

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
NAROOMA	Former Caltex - Narooma	82 Princes HIGHWAY	Service Station	Contamination formerly regulated under the CLM Act	-36.21711766	150.1279305
NARRABEEN	Caltex Service Station	1509-1511 Pittwater ROAD	Service Station	Regulation under CLM Act not required	-33.70455756	151.2969352
NARRABEEN	Shell Coles Express Service Station	1418 Pittwater ROAD	Service Station	Regulation under CLM Act not required	-33.70013931	151.3002782
NARRABEEN	Narrabeen Shotgun Range Sydney Academy of Sport	Wakehurst PARKWAY	Unclassified	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.72138423	151.2642798
NARRABEEN	7-Eleven Service Station	1234 Pittwater ROAD	Service Station	Regulation under CLM Act not required	-33.71958892	151.298272
NARRABRI	Caltex Service Station	13 Doyle STREET	Service Station	Regulation under CLM Act not required	-30.3239182	149.7843052
NARRABRI	Lowes Petroleum (Former Mobil) Narrabri Depot	3 Old Gunnedah ROAD	Other Petroleum	Regulation under CLM Act not required	-30.33473586	149.789587
NARRABRI	Caltex Service Station	31-35 Cooma ROAD	Service Station	Regulation under CLM Act not required	-30.33968576	149.7657241
NARRABRI	Caltex Narrabri Service Station	31 Dangar (Cnr Anne and Dangar) STREET	Service Station	Regulation under CLM Act not required	-30.32989667	149.7756598
NARRABRI	Caltex Service Station	12 Reid STREET	Other Petroleum	Regulation under CLM Act not required	-30.32282764	149.7901182
NARRABRI	Cargill Soapstock Disposal Site	Westport ROAD	Unclassified	Contamination formerly regulated under the CLM Act	-30.4698458	149.6981931
NARRABRI	Caltex Service Station	7-13 James STREET	Service Station	Regulation under CLM Act not required	-30.33016168	149.7940732
NARRANDERA	Former Mobil Narrandera Depot	24 Whitton STREET	Other Petroleum	Regulation under CLM Act not required	-34.7410523	146.5620667
NARRANDERA	Former Mobil Emoleum Narrandera Depot	5-7 Margaret STREET	Other Petroleum	Regulation under CLM Act not required	-34.74105391	146.5628144
NARROMINE	Narromine Fuel (Former Caltex) Service Station	Cnr Burraway Street and Algalah STREET	Service Station	Regulation under CLM Act not required	-32.23565321	148.2454259
NELLIGEN	Former Clay Target Shooting Range	1398 Kings Highway and adjoining land on Old Bolaro Mountain ROAD	Unclassified	Contamination currently regulated under CLM Act	-35.64392469	150.0955224

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
NELLIGEN	Lot 2 Old Bolaro Road	Old Bolaro ROAD	Unclassified	Contamination formerly regulated under the CLM Act	-35.64485609	150.0937341
NELSON BAY	Shell Coles Express Service Station	25 Stockton STREET	Service Station	Regulation under CLM Act not required	-32.72265762	152.1437317
NELSON BAY	Former Caltex Service Station Nelson Bay	38 Stockton STREET	Service Station	Regulation under CLM Act not required	-32.72335662	152.1429384
NEMINGHA	Caltex Service Station and Depot Nemingha	428 Armidale (previously 16 New England Highway) ROAD	Service Station	Regulation under CLM Act not required	-31.12425169	150.9909054
NEUTRAL BAY	Caltex Service Station	16-38 Military ROAD	Service Station	Regulation under CLM Act not required	-33.82907162	151.2163342
NEUTRAL BAY	Shell Coles Express Service Station	200-204 Ben Boyd ROAD	Service Station	Regulation under CLM Act not required	-33.82915781	151.219437
NEW LAMBTON	Caltex Service Station New Lambton	144 Bridges ROAD	Service Station	Regulation under CLM Act not required	-32.93283668	151.7141748
NEW LAMBTON	BP Service Station	105 St James ROAD	Service Station	Regulation under CLM Act not required	-32.92910325	151.7155801
NEW LAMBTON	7-Eleven (former Mobil) Service Station	291 Turton ROAD	Service Station	Regulation under CLM Act not required	-32.91773864	151.7243096
NEWCASTLE	Reclaimed Land	26-28 Honeysuckle DRIVE	Unclassified	Contamination formerly regulated under the CLM Act	-32.92604705	151.7649508
NEWCASTLE	Wharf Road Newcastle Car Park	313-317 Wharf ROAD	Unclassified	Regulation under CLM Act not required	-32.92570385	151.7744076
NEWCASTLE	Newcastle Foreshore	40 Stevenson Place STREET	Other Industry	Regulation under CLM Act not required	-32.92556503	151.7876742
NEWCASTLE	SRA Land	Scott STREET	Gasworks	Regulation under CLM Act not required	-32.92641425	151.7837817
NEWCASTLE WEST	Former Mobil Service Station	113 Parry STREET	Service Station	Regulation under CLM Act not required	-32.92560628	151.7558542
NEWPORT	7-Eleven (former Mobil) Service Station	307 Barrenjoey ROAD	Service Station	Regulation under CLM Act not required	-33.65632902	151.3182089
NEWPORT	Former Caltex Service Station Newport	316-324 Barrenjoey ROAD	Service Station	Regulation under CLM Act not required	-33.65634516	151.3191571

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
NEWTOWN	Caltex Service Station Newtown	26 - 36 Enmore ROAD	Service Station	Regulation under CLM Act not required	-33.89851331	151.17714
NEWTOWN	Former Service Station	81 Wilson STREET	Service Station	Contamination formerly regulated under the CLM Act	-33.89626791	151.1827556
NEWTOWN	Aluminium Enterprises	66 Brocks LANE	Metal Industry	Contamination was addressed via the planning process (EP&A Act)	-33.89467126	151.1847528
NEWTOWN	Adjacent to Former Service Station	79 Wilson STREET	Service Station	Contamination formerly regulated under the CLM Act	-33.89630155	151.1826567
NORAVILLE	Former Toukley Landfill	Wilfred Barrett DRIVE	Landfill	Regulation under CLM Act not required	-33.27734185	151.5537784
NORTH ALBURY	Caltex Service Station and Diesel Stop	79 Union ROAD	Service Station	Regulation under CLM Act not required	-36.05496713	146.9487635
NORTH BOAMBEE VALLEY	Caltex Service Station	Cnr Pacific Hwy & Halls ROAD	Service Station	Regulation under CLM Act not required	-30.30639482	153.1007996
NORTH BONDI	Caltex Service Station North Bondi	321 Old South Head ROAD	Service Station	Regulation under CLM Act not required	-33.88463526	151.268551
NORTH NARRABEEN	7-Eleven Service Station	1501-1503 Pittwater ROAD	Service Station	Regulation under CLM Act not required	-33.70749859	151.296351
NORTH RICHMOND	Caltex Service Station	50 Bells Line Of ROAD	Service Station	Regulation under CLM Act not required	-33.57991338	150.7202346
NORTH ROCKS	7-Eleven Service Station North Rocks	340 North Rocks ROAD	Service Station	Regulation under CLM Act not required	-33.76895144	151.0305952
NORTH ST MARYS	BP Service Station	76 Glossop STREET	Service Station	Regulation under CLM Act not required	-33.76020183	150.7818149
NORTH STRATHFIELD	Budget Service Station	143 Concord ROAD	Service Station	Regulation under CLM Act not required	-33.85945248	151.0927853
NORTH STRATHFIELD	Former Caltex Service Station	92a Concord ROAD	Service Station	Regulation under CLM Act not required	-33.86244297	151.0932434
NORTH SYDNEY	Iora Complex	1 Kiara PLACE	Gasworks	Regulation under CLM Act not required	-33.843145	151.2161142
NORTH SYDNEY	Neutral Bay Sediments	Adjacent to Sub Base Platypus, High STREET	Gasworks	Contamination formerly regulated under the CLM Act	-33.842724	151.2174523

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
NORTH SYDNEY	Sub Base Platypus (previously HMAS Platypus)	High STREET	Gasworks	Contamination formerly regulated under the CLM Act	-33.84325935	151.2170347
NORTH WOLLONGONG	Former Mobil Depot	122-126 Montague STREET	Other Petroleum	Regulation under CLM Act not required	-34.40988259	150.8939374
NORTHMEAD	Former Prestige Plastics	1C Redbank ROAD	Other Industry	Regulation under CLM Act not required	-33.79716925	150.989926
NORTHMEAD	Coles Express Service Station Northmead	197 Windsor ROAD	Service Station	Regulation under CLM Act not required	-33.77741733	151.0001719
NORTHMEAD	Sydney Water Land	51c Hammers ROAD	Landfill	Regulation under CLM Act not required	-33.7887535	150.9858088
NORTHMEAD	Caltex Service Station	98-100 Windsor ROAD	Service Station	Regulation under CLM Act not required	-33.78786563	150.9945909
NORTHMEAD	7-Eleven Service Station Northmead	56 Windsor ROAD	Service Station	Regulation under CLM Act not required	-33.79090731	150.9967332
NOWRA	Former Gasworks Managers Residence	24 Osborne STREET	Gasworks	Regulation under CLM Act not required	-34.8708875	150.5992586
NOWRA	Fire Station	69 Bridge ROAD	Gasworks	Regulation under CLM Act not required	-34.87081582	150.6004881
NOWRA	Historically Filled Land	70 Bridge ROAD	Unclassified	Regulation under CLM Act not required	-34.87081809	150.6013231
NOWRA	Shell Coles Express Service Station	55 Kinghorne STREET	Service Station	Regulation under CLM Act not required	-34.87633757	150.6023481
NOWRA	Former gasworks	Lamonds LANE	Gasworks	Contamination currently regulated under CLM Act	-34.87111182	150.6000803
NOWRA	Former Hollingworth Scrap Yard	72-74 Jervis and 117 East STREET	Other Industry	Regulation under CLM Act not required	-34.88324216	150.6034361
NOWRA	Woolworths Service Station	60 North Street STREET	Service Station	Regulation under CLM Act not required	-34.87266278	150.6014052
NOWRA	Harry Sawkins Park	Bounded by Princes Hwy, Graham St & McGrath AVENUE	Gasworks	Regulation under CLM Act not required	-34.87093993	150.6037157
NOWRA EAST	Mobil Service Station	Lot 3 Kalandar STREET	Service Station	Contamination formerly regulated under the CLM Act	-34.88850535	150.6093504

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
NYNGAN	Caltex Service Station	39-41 Pangee STREET	Service Station	Regulation under CLM Act not required	-31.56101006	147.1914997
NYNGAN	Caltex Service Station	126 Pangee STREET	Service Station	Regulation under CLM Act not required	-31.56482841	147.2002892
OAK FLATS	Shellharbour City Works Depot	132 Industrial ROAD	Other Industry	Regulation under CLM Act not required	-34.56546013	150.8087225
OBERON	Caltex Service Station and Depot	Lowes Mount ROAD	Service Station	Regulation under CLM Act not required	-33.69509055	149.8570553
OBERON	Oberon Timber Complex	Lowes Mount ROAD	Other Industry	Regulation under CLM Act not required	-33.69264862	149.8564588
OBERON	Former Shell Depot	32 O'Connell ROAD	Other Petroleum	Regulation under CLM Act not required	-33.6997172	149.8450057
OBERON	CSR Ltd Property and King's Stockyard Creek	Off Endeavour STREET	Other Industry	Contamination formerly regulated under the CLM Act	-33.6922152	149.8686909
OCEAN SHORES	Former Ocean Shores Service Station	Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-28.51270299	153.5301496
OLD GUILDFORD	Caltex Service Station	636-644 Woodville ROAD	Service Station	Regulation under CLM Act not required	-33.86670857	150.9879189
ORANGE	Former Fuel Depot	24-28 Peisley STREET	Other Petroleum	Contamination currently regulated under CLM Act	-33.29624293	149.1017277
ORANGE	Caltex Orange Depot	184 Byng STREET	Service Station	Regulation under CLM Act not required	-33.28285589	149.1050273
ORANGE	Woolworths Orange Service Station	357-361 Summer Street, corner William STREET	Service Station	Regulation under CLM Act not required	-33.28445811	149.1053604
ORANGE	BP Orange Service Station (Reliance Petroleum)	81 Summer STREET	Service Station	Regulation under CLM Act not required	-33.2825884	149.0951535
ORANGE	BP-Branded Lowes Petroleum Depot	197 - 201 Margaret STREET	Other Petroleum	Regulation under CLM Act not required	-33.27145977	149.1078103
ORANGE	Caltex Summer Street Service Station Orange	70-74 Summer Street, corner Hill STREET	Service Station	Regulation under CLM Act not required	-33.28311722	149.0940712
ORANGE	Lowes Petroleum (BP-branded) Service Station	76 Peisley STREET	Service Station	Regulation under CLM Act not required	-33.29025034	149.1027194

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
ORANGE	Former Mobil Service Station	24-28 Bathurst ROAD	Service Station	Regulation under CLM Act not required	-33.2866912	149.1066505
ORANGE	BP (Reliance Petroleum) Service Station Orange	56-60 Bathurst ROAD	Service Station	Regulation under CLM Act not required	-33.28980053	149.1086212
ORANGE	Former Mobil Service Station	168 Peisley STREET	Service Station	Regulation under CLM Act not required	-33.28525478	149.1037259
ORANGE	5-7 Edward St Orange	5-7 Edward STREET	Other Industry	Contamination currently regulated under CLM Act	-33.2991077	149.1034092
OURIMBAH	Palmdale Service Centre Pty Ltd	3130 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.3381336	151.374586
OURIMBAH	United Ourimbah	51 Pacific HIGHWAY	Service Station	Under assessment	-33.36025941	151.3694483
OURIMBAH	Shell Coles Express Service Station	78-80 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.3468202	151.3710098
OXLEY VALE	Hayes Transport Services	10 Manilla ROAD	Other Petroleum	Regulation under CLM Act not required	-31.06991417	150.9101381
OYSTER BAY	Shell Coles Express Service Station	20 Carvers ROAD	Service Station	Contamination currently regulated under CLM Act	-34.00934475	151.0758626
OYSTER COVE	Cove Marine Pty Ltd	60 Frederick STREET	Unclassified	Contamination currently regulated under POEO Act	-32.73549959	151.952446
PADDINGTON	7-Eleven Service Station	59 Oxford STREET	Service Station	Contamination currently regulated under CLM Act	-33.88322921	151.2205024
PADDINGTON	Former Workshop	52 Hopewell STREET	Other Industry	Regulation under CLM Act not required	-33.881947	151.222074
PADSTOW	Caltex Padstow	115 Fairford ROAD	Service Station	Regulation under CLM Act not required	-33.9434571	151.0345671
PADSTOW	Selleys / Dulux	1-29 Gow STREET	Chemical Industry	Regulation under CLM Act not required	-33.93904125	151.0381725
PADSTOW	Former Exide Battery Manufacturing & Recycling	55 Bryant STREET	Other Industry	Contamination currently regulated under CLM Act	-33.94265241	151.0378986
PADSTOW	Galvatech	49 Gow STREET	Metal Industry	Contamination currently regulated under POEO Act	-33.93808679	151.0346862

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
PADSTOW	Foseco Australia	7 Stuart STREET	Chemical Industry	Regulation under CLM Act not required	-33.94342957	151.0377316
PADSTOW	Sebel Furniture	Parts 64 and 92 Gow STREET	Other Industry	Regulation under CLM Act not required	-33.93606752	151.0322057
PAGEWOOD	Former Email Site	Corner of Page Street and Holloway STREET	Metal Industry	Contamination currently regulated under CLM Act	-33.94302462	151.2132036
PAMBULA	Offsite area (roadways) adjacent to United Service Station Pambula (former Shell)	Corner Quondola Street and Bullara STREET	Service Station	Regulation under CLM Act not required	-36.93104481	149.8746763
PARKES	Caltex Service Station Parkes	352-360 Clarinda STREET	Service Station	Regulation under CLM Act not required	-33.13317454	148.173643
PARKES	Former Caltex Parkes (Mugincoble) Depot - Eugowra Rd, Mugincoble	Eugowra ROAD	Service Station	Regulation under CLM Act not required	-33.19007031	148.224822
PARKES	BP Truckstop	(Newell Highway) 1 Forbes ROAD	Other Petroleum	Regulation under CLM Act not required	-33.14309226	148.1710282
PARKES	Former BP Telescope Service Station	339-341 Clarinda STREET	Service Station	Regulation under CLM Act not required	-33.13216152	148.1743239
PARKES	BP Reliance East End Service Station Parkes	46 Clarinda STREET	Service Station	Regulation under CLM Act not required	-33.14243539	148.1846227
PARKES	Former Parkes Gas Works (including Rail Corridor and offsite land)	129 Woodward Street and land within the Parkes railway CORRIDOR	Gasworks	Contamination currently regulated under CLM Act	-33.146775	148.186353
PARKLEA	Caltex Parklea Service Station	Old Windsor (north of Miami Street) ROAD	Service Station	Regulation under CLM Act not required	-33.72427108	150.9388531
PARRAMATTA	BP Service Station	435 Church STREET	Service Station	Regulation under CLM Act not required	-33.80498714	151.0056151
PARRAMATTA	Coleman Oval Embankment	Cnr of Pitt STREET and Maquarie STREET	Unclassified	Regulation under CLM Act not required	-33.80441625	150.9954841
PARRAMATTA	7-Eleven (former Mobil) Service Station	81 Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.80919769	151.0142894
PARRAMATTA	Parramatta Park Toilet Block Demolition	The Cresent Toilet Block Parramatta PARK	Unclassified	Regulation under CLM Act not required	-33.81054034	150.9961968
PAUPONG	Former Timber Treatment Plant	Off Paupong ROAD	Other Industry	Regulation under CLM Act not required	-36.57657408	148.6624998

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
PENDLE HILL	7-Eleven Service Station	217 Wentworth AVENUE	Service Station	Regulation under CLM Act not required	-33.8017814	150.9577994
PENNANT HILLS	Shell Coles Express Pennant Hills West	386 Pennant Hills ROAD	Service Station	Contamination currently regulated under CLM Act	-33.73928611	151.0679704
PENRITH	Mirvac Industrial Site	2101 Castlereagh ROAD	Other Industry	Regulation under CLM Act not required	-33.73497514	150.6954097
PENRITH	7-Eleven (former Mobil) Service Station	212-222 Andrews ROAD	Service Station	Regulation under CLM Act not required	-33.73059678	150.6952571
PENRITH	Lowes Petroleum (Former Mobil) Depot Penrith	174 Coreen AVENUE	Other Petroleum	Regulation under CLM Act not required	-33.74484268	150.6980504
PENRITH	Caltex Service Station	Castlereagh Rd Cnr Lugard STREET	Service Station	Regulation under CLM Act not required	-33.73426843	150.6933382
PENRITH	BP Express Service Station	Corner Coreen Avenue and Castlereagh ROAD	Service Station	Regulation under CLM Act not required	-33.74385498	150.6925743
PENRITH	Crane Enfield Metals	Castlereagh ROAD	Metal Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.73734959	150.696442
PENRITH	7-Eleven Service Station Penrith	30 Henry STREET	Service Station	Regulation under CLM Act not required	-33.75408799	150.7045594
PENRITH	Caltex Penrith Service Station	153 Coreen AVENUE	Service Station	Regulation under CLM Act not required	-33.74287244	150.6927071
PENRITH	Jet 60 Dry Cleaners	Shop 3 134-138 Henry STREET	Unclassified	Regulation under CLM Act not required	-33.75231953	150.6964541
PENRITH	St Mary's Shopping Village	Charles Hackett DRIVE	Other Industry	Regulation under CLM Act not required	-33.766814	150.770363
PENRITH	Former Dry Cleaners	Shop 3, 134-138 Henry STREET	Other Industry	Regulation under CLM Act not required	-33.75231953	150.6964541
PENSHURST	7-Eleven Service Station	612 Forest ROAD	Service Station	Regulation under CLM Act not required	-33.96153533	151.0793525
PENSHURST	Caltex Service Station	641 King Georges ROAD	Service Station	Regulation under CLM Act not required	-33.95985335	151.0891118
PERISHER VALLEY	Perisher Centre Loading Dock	Kosciuszko ROAD	Other Petroleum	Regulation under CLM Act not required	-36.40392862	148.4111593

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
PERISHER VALLEY	Perisher Ski Resort	Kosciuszko ROAD	Other Petroleum	Regulation under CLM Act not required	-36.41106374	148.4005469
PETERSHAM	Fanny Durack Aquatic Centre	Station STREET	Unclassified	Regulation under CLM Act not required	-33.89194583	151.151824
PHEASANTS NEST	7-Eleven Service Station	(Southbound) Hume HIGHWAY	Service Station	Regulation under CLM Act not required	-34.28291571	150.6394606
PHEASANTS NEST	7-Eleven (former Mobil) Service Station	(Northbound) Hume HIGHWAY	Service Station	Regulation under CLM Act not required	-34.28303112	150.6363145
PICTON	Coles Express Picton	93-99 Argyle STREET	Service Station	Regulation under CLM Act not required	-34.16844337	150.6114236
PICTON	McDonalds	69 -71 Argyle STREET	Service Station	Regulation under CLM Act not required	-34.16711877	150.6121524
PITT TOWN	Whites Water Service	1 Canning PLACE	Other Industry	Under preliminary investigation order	-33.574095	150.881258
PLUMPTON	Woolworths Service Station Plumpton (Plumpton Marketplace Shops)	260 Jersey ROAD	Service Station	Regulation under CLM Act not required	-33.74478874	150.8369408
PORT BOTANY	Vopak B	20 Friendship ROAD	Chemical Industry	Regulation under CLM Act not required	-33.97946548	151.2121752
PORT BOTANY	Vopak A	49 Friendship ROAD	Chemical Industry	Regulation under CLM Act not required	-33.97426175	151.2206228
PORT BOTANY	Terminals	45 Friendship ROAD	Chemical Industry	Regulation under CLM Act not required	-33.97609287	151.2174402
PORT BOTANY	Bunnerong Canal	Between Brotherson Dock and Bumborah Point ROAD	Unclassified	Regulation under CLM Act not required	-33.96798227	151.2230052
PORT BOTANY	Bulk Liquids Berth UPSS, Port Botany	Charlotte ROAD	Other Petroleum	Regulation under CLM Act not required	-33.97386329	151.2120157
PORT BOTANY	Port Operations Centre UPSS, Port Botany	Penrhyn ROAD	Other Petroleum	Regulation under CLM Act not required	-33.96803686	151.2205968
PORT BOTANY	Port Botany Railway Corridors	Friendship ROAD	Other Industry	Regulation under CLM Act not required	-33.95467008	151.2178012
PORT BOTANY	Smith Bros	4 Bumborah Point ROAD	Other Petroleum	Regulation under CLM Act not required	-33.9681757	151.2239505

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
PORT BOTANY	Vopak Terminals	21 Fishburn ROAD	Other Industry	Under assessment	-33.978961	151.217144
PORT KEMBLA	Coates Hire Facility (Eastern Portion)	1 Flinders STREET	Other Industry	Regulation under CLM Act not required	-34.47104817	150.89162
PORT KEMBLA	Shell Port Kembla CVRO	87-89 Flinders STREET	Other Petroleum	Regulation under CLM Act not required	-34.46964995	150.8953859
PORT KEMBLA	Darcy Road Rail Sidings	Darcy ROAD	Other Industry	Regulation under CLM Act not required	-34.47792834	150.9105503
PORT KEMBLA	No 2 Steelworks	Five Islands ROAD	Metal Industry	Regulation under CLM Act not required	-34.45965024	150.8844432
PORT KEMBLA	Port Kembla Orica	Foreshore Road and Darcy ROAD	Other Industry	Contamination currently regulated under CLM Act	-34.47773583	150.9054545
PORT KEMBLA	Port Kembla, Auszinc Metals and Alloys	Lot 2 Shellharbour ROAD	Metal Industry	Regulation under CLM Act not required	-34.49335414	150.8961205
PORT KEMBLA	South Yard Rail Sidings	Lot 3 Old Port ROAD	Unclassified	Regulation under CLM Act not required	-34.47500551	150.8951759
PORT KEMBLA	Manildra Park	Flinders STREET	Other Petroleum	Contamination formerly regulated under the CLM Act	-34.46946878	150.8935731
PORT KEMBLA	Port Kembla Copper Smelter	Military ROAD	Metal Industry	Contamination currently regulated under POEO Act	-34.4810006	150.9063426
PORT KEMBLA	Caltex Service Station	16 Flinders STREET	Service Station	Regulation under CLM Act not required	-34.47058088	150.8945864
PORT KEMBLA	BHP Area 21	Springhill ROAD	Metal Industry	Contamination formerly regulated under the CLM Act	-34.45244614	150.8676517
PORT KEMBLA	Port Kembla Steelworks Recycling Area	Springhill ROAD	Unclassified	Regulation under CLM Act not required	-34.45271181	150.8677127
PORT KEMBLA	Commonwealth Rolling Mills (CRM)	Old Port ROAD	Metal Industry	Regulation under CLM Act not required	-34.47476117	150.8974746
PORT KEMBLA	Port Kembla, Former Electricity Commission Site	Old Port Road/Christie Drive ROAD	Other Industry	Regulation under CLM Act not required	-34.46899143	150.8982854
PORT KEMBLA	Port Kembla Steelworks - Steelhaven	Five Islands ROAD	Other Industry	Regulation under CLM Act not required	-34.47605247	150.891144

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
PORT KEMBLA	Port Kembla Steelworks - No.1 Works Site	Five Islands ROAD	Metal Industry	Regulation under CLM Act not required	-34.47386606	150.8794912
PORT KEMBLA	Port Kembla Springhill Works	Springhill ROAD	Metal Industry	Regulation under CLM Act not required	-34.45905808	150.8749558
PORT MACQUARIE	Former Mobil Depot	211 Lake ROAD	Other Petroleum	Regulation under CLM Act not required	-31.44688513	152.8864499
PORT MACQUARIE	Caltex Service Station	112-114 Gordon STREET	Service Station	Regulation under CLM Act not required	-31.43491709	152.9047618
PORT MACQUARIE	Caltex Port Macquarie Service Station	29 Lord STREET	Service Station	Regulation under CLM Act not required	-31.43326436	152.9169873
PORT MACQUARIE	Coles Myer	43 John Oxley DRIVE	Service Station	Regulation under CLM Act not required	-31.45741442	152.8739626
PORT MACQUARIE	Air BP Avgas Facility	Oliver DRIVE	Other Petroleum	Regulation under CLM Act not required	-31.43227222	152.8681083
PORT MACQUARIE	Former Mobil Service Station	Corner Oxley Highway and Major Innes DRIVE	Service Station	Regulation under CLM Act not required	-31.45738931	152.873956
PORT MACQUARIE	Port Macquarie Council Depot	Koala STREET	Unclassified	Regulation under CLM Act not required	-31.45341586	152.9032764
PORT MACQUARIE	Shell Coles Express Port Macquarie Service Station	121 Gordon STREET	Service Station	Regulation under CLM Act not required	-31.4343131	152.9046869
PORT MACQUARIE	Caltex Service Station	92 Hastings River DRIVE	Service Station	Regulation under CLM Act not required	-31.42934052	152.8830188
PORT MACQUARIE	Caltex Service Station	12-14 Bolwarra ROAD	Service Station	Regulation under CLM Act not required	-31.45015286	152.8854769
PORT MACQUARIE	Car park	28 Hayward STREET	Other Industry	Regulation under CLM Act not required	-31.43385131	152.9072399
PORTLAND	Ivanhoe Colliery	Pipers Flat ROAD	Other Industry	Regulation under CLM Act not required	-33.36595748	150.0099577
PORTLAND	Mt Piper Power Station	350 Boulder ROAD	Other Petroleum	Regulation under CLM Act not required	-33.35581541	150.0350801
PRAIRIEWOOD	7-Eleven (former Caltex) Service Station	485-487 Smithfield ROAD	Service Station	Regulation under CLM Act not required	-33.87102509	150.9031383

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
PROSPECT	7-Eleven (former Mobil) Service Station Prospect	354 Flushcombe ROAD	Service Station	Regulation under CLM Act not required	-33.79541624	150.9049417
PROSPECT	Pincott's Cottage, Gate C1	Off Reservoir ROAD	Unclassified	Regulation under CLM Act not required	-33.81589773	150.9144343
PROSPECT	Gatehouse, 544 Reservoir Road	544 Reservoir ROAD	Unclassified	Regulation under CLM Act not required	-33.81049244	150.9157439
PROSPECT	Cottage 3, William Lawson Drive	William Lawson DRIVE	Unclassified	Regulation under CLM Act not required	-33.81490331	150.9149885
PUNCHBOWL	Former BP Service Station	1375 Canterbury Road, corner Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.93170424	151.0537302
PUNCHBOWL	Punchbowl Laundry	42-44 Belmore ROAD	Chemical Industry	Contamination currently regulated under CLM Act	-33.93582701	151.0562638
PUNCHBOWL	Caltex Service Station Punchbowl	1285-1289 Canterbury ROAD	Service Station	Regulation under CLM Act not required	-33.93146308	151.0596348
PUTNEY	Putney Marina	20 Waterview STREET	Other Industry	Regulation under CLM Act not required	-33.82608091	151.1003966
PYMBLE	Caltex Service Station	1089 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.74102977	151.1385257
PYMBLE	Shell Coles Express Service Station	21 Ryde ROAD	Service Station	Regulation under CLM Act not required	-33.75198512	151.1438115
PYMBLE	Former 3M site	950 Pacific HIGHWAY	Gasworks	Regulation under CLM Act not required	-33.75050288	151.1460578
PYMBLE	Pymble West Dry Cleaners	6 Philip MALL	Other Industry	Under preliminary investigation order	-33.76109009	151.1284329
PYRMONT	Former Council Works Depot (Fig and Wattle Depot)	14-26 Wattle STREET	Other Industry	Regulation under CLM Act not required	-33.8752655	151.1942645
QUAKERS HILL	7-Eleven (former Mobil) Service Station	83 Lalor ROAD	Service Station	Regulation under CLM Act not required	-33.72759077	150.8966764
QUAKERS HILL	BP Branded Parkway (Former Caltex) Service Station Quakers Hill	450 Quakers Hill PARKWAY	Service Station	Regulation under CLM Act not required	-33.72998613	150.9023617
QUEANBEYAN	Former Mobil Service Station	153 Uriarra ROAD	Service Station	Regulation under CLM Act not required	-35.34425514	149.2148687

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
QUEANBEYAN	Bill Lilley Automotive	169 Crawford STREET	Service Station	Regulation under CLM Act not required	-35.35138121	149.232486
QUEANBEYAN	Woolworths Queanbeyan Service Station	196 Crawford (Cnr Morisset St) STREET	Service Station	Regulation under CLM Act not required	-35.35163055	149.2335759
QUEANBEYAN	Caltex Queanbeyan Service Station	88 Macquoid (also known as Bungendore Rd) STREET	Service Station	Regulation under CLM Act not required	-35.34930535	149.2438607
QUEANBEYAN	Former Mobil Emoleum Depot	109-111 High STREET	Other Petroleum	Regulation under CLM Act not required	-35.3396115	149.237556
QUEANBEYAN	Former Caltex Depot	20-30 Railway STREET	Other Petroleum	Regulation under CLM Act not required	-35.34187485	149.2247277
QUEANBEYAN EAST	BP-Branded Service Station Queanbeyan	50 Yass ROAD	Service Station	Regulation under CLM Act not required	-35.34126641	149.2445103
QUEANBEYAN WEST	Caltex Service Station	Lanyon Dr Cnr Mccrae St (1 Suraci Place) STREET	Service Station	Regulation under CLM Act not required	-35.36372923	149.2067531
QUIRINDI	Former Mobil Depot Quirindi	4-6 Cross STREET	Other Petroleum	Regulation under CLM Act not required	-31.49903355	150.681972
QUIRINDI	Tamarang ServiCentre Quirindi	113-117 Station (also known as 119-121 Nowland) STREET	Service Station	Under assessment	-31.50179204	150.6814611
QUIRINDI	Caltex Service Station, Quirindi	199-201 George STREET	Service Station	Regulation under CLM Act not required	-31.5068778	150.6805874
RAMSGATE	Shell Coles Express Service Station	Grand Parade cnr Ramsgate ROAD	Service Station	Regulation under CLM Act not required	-33.98537988	151.1471234
RANDWICK	7-Eleven Service Station	126-130 Barker STREET	Service Station	Contamination currently regulated under CLM Act	-33.92096152	151.2355927
RANDWICK	Caltex Service Station	2 Alison ROAD	Service Station	Regulation under CLM Act not required	-33.9065752	151.2320697
RANDWICK	Metro Petroleum	345 Avoca STREET	Service Station	Regulation under CLM Act not required	-33.92544832	151.2396799
RANDWICK	Service Station, Randwick	33-37 Carrington ROAD	Service Station	Contamination currently regulated under CLM Act	-33.90655015	151.2525065
RAVENSWORTH	Ravensworth Operations Narama Mine	Lemington ROAD	Other Industry	Regulation under CLM Act not required	-32.47115903	151.0359579

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
RAVENSWORTH	Cumnock Colliery	Pikes Gully ROAD	Other Industry	Regulation under CLM Act not required	-32.40218281	150.9960082
RAYMOND TERRACE	Shell Coles Express Raymond Terrace	107 Adelaide (formerly Pacific Highway) STREET	Service Station	Regulation under CLM Act not required	-32.76110922	151.7492847
RAYMOND TERRACE	Caltex Service Station Raymond Terrace	136 Adelaide Street, corner Glenelg STREET	Service Station	Regulation under CLM Act not required	-32.76503842	151.7425264
RAYMOND TERRACE	Former Motor Registry	53 William STREET	Other Petroleum	Regulation under CLM Act not required	-32.76286473	151.7445839
RAYMOND TERRACE	Raymond Terrace Wastewater Treatment Works	22 Elizabeth AVENUE	Other Industry	Regulation under CLM Act not required	-32.774658	151.749978
REDFERN	BP Service Station	116 Regent STREET	Service Station	Regulation under CLM Act not required	-33.89367876	151.1995256
REDFERN	Former Printing Works	101a Marriott STREET	Other Industry	Regulation under CLM Act not required	-33.89512556	151.2113422
REDFERN	BP-branded Jasbe Surry Hills	411 Cleveland STREET	Service Station	Regulation under CLM Act not required	-33.89183974	151.2132466
REDFERN	Surry Hills Shopping Village	397-399 Cleveland & 2-38 Baptist STREET	Other Industry	Regulation under CLM Act not required	-33.89229521	151.2119397
REVESBY	Dorf Clark Industries	184-194 Milperra ROAD	Metal Industry	Regulation under CLM Act not required	-33.93387149	151.000553
REVESBY	Bituminous Products	33-35 Violet STREET	Chemical Industry	Contamination currently regulated under CLM Act	-33.93702092	151.0067896
REVESBY	Mirotone Pty Ltd	21 Marigold STREET	Chemical Industry	Contamination currently regulated under POEO Act	-33.93559608	151.0002207
REVESBY	Caltex Service Station Revesby	181 The River ROAD	Service Station	Regulation under CLM Act not required	-33.95573605	151.0171779
RHODES	Homebush Bay Sediments adjoining the former UCAL and Allied Feeds sites	Homebush BAY	Chemical Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.8263749	151.0839216
RHODES	Former Glad factory site	10-16 Marquet STREET	Chemical Industry	Regulation under CLM Act not required	-33.82884048	151.0848716
RHODES	Former Allied Feeds site	Walker STREET	Other Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.82465376	151.0870401

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
RHODES	Former UCAL site	Walker STREET	Chemical Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.82727505	151.0853195
RHODES	Homebush Bay sediments adjoining former Berger Paint factory	Oulton AVENUE	Chemical Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.83535308	151.083238
RICHMOND	Caltex Richmond Service Station	98 March (Cnr East Market St) STREET	Service Station	Regulation under CLM Act not required	-33.59937996	150.7514483
RIVERSTONE	Axalta Coating Systems	15-23 Melbourne ROAD	Other Industry	Regulation under CLM Act not required	-33.6636649	150.8557519
RIVERSTONE	7-Eleven Riverstone	55 Garfield ROAD	Service Station	Regulation under CLM Act not required	-33.67802232	150.8635246
RIVERSTONE	Woolworths Vineyard Service Station, Riverstone	1 Woodland Street, corner of Windsor ROAD	Service Station	Regulation under CLM Act not required	-33.65607641	150.8724067
RIVERSTONE	Vacant Commercial Land	88-94 Junction ROAD	Unclassified	Regulation under CLM Act not required	-33.66226398	150.8789967
RIVERWOOD	7-Eleven Riverwood	30 Bonds ROAD	Service Station	Regulation under CLM Act not required	-33.9523701	151.0583887
ROCKDALE	7-Eleven (former Mobil) Service Station	293 West Botany STREET	Service Station	Regulation under CLM Act not required	-33.94995672	151.1484667
ROCKDALE	7-Eleven Service Station	99 Railway STREET	Service Station	Regulation under CLM Act not required	-33.95247322	151.1356785
ROCKDALE	Lindsay St, Rockdale	7 Lindsay STREET	Other Industry	Under assessment	-33.95900867	151.1436466
ROOTY HILL	7-Eleven (former Mobil) Service Station	106 Rooty Hill Road South ROAD	Service Station	Regulation under CLM Act not required	-33.78036181	150.8501998
ROOTY HILL	7-Eleven (former Mobil) Service Station	1042 Great Western HIGHWAY	Service Station	Regulation under CLM Act not required	-33.78214955	150.8287656
ROOTY HILL	Infrabuild NSW Pty Ltd (formerly OneSteel NSW Pty Ltd)	22 Kellogg ROAD	Other Industry	Regulation under CLM Act not required	-33.76664143	150.8493465
ROSE BAY	Caltex Rose Bay Service Station	488 Old South Head ROAD	Service Station	Regulation under CLM Act not required	-33.87475145	151.2723847
ROSE BAY	Rose Bay Budget Service station	638-646 New South Head ROAD	Service Station	Contamination formerly regulated under the CLM Act	-33.87062149	151.2677617

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
ROSEBERY	Autofoil P/L	2 Mentmore AVENUE	Other Industry	Regulation under CLM Act not required	-33.91121318	151.2054882
ROSEBERY	Caltex Rosebery Service Station	321 Gardeners (Cnr Macquarie St) ROAD	Service Station	Contamination currently regulated under CLM Act	-33.92302898	151.2059541
ROSEBERY	Former Industrial Site (Former Electroplating Facility)	108 Dunning AVENUE	Other Industry	Regulation under CLM Act not required	-33.91630811	151.201557
ROSEBERY	Rosebery Service Station	395 Gardeners ROAD	Service Station	Contamination formerly regulated under the CLM Act	-33.92246784	151.2024589
ROSEHILL	James Hardie Australia and former James Hardie lands	Devon STREET	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.82539019	151.0339466
ROSEHILL	2 Ritchie Street, Rosehill	2 Ritchie STREET	Unclassified	Contamination formerly regulated under the CLM Act	-33.82691192	151.0154948
ROSEHILL	James Hardie Factory (former, western portion)	181 James Ruse DRIVE	Other Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.81605834	151.0238145
ROSELANDS	Roselands Shopping Centre	24 Roseland AVENUE	Service Station	Regulation under CLM Act not required	-33.93499281	151.0691284
ROSELANDS	Woolworths Caltex Petrol Service Station Roselands	218 King Georges ROAD	Service Station	Regulation under CLM Act not required	-33.93303118	151.0735036
ROSELANDS	7-Eleven (former Mobil) Service Station	91 Canary's ROAD	Service Station	Regulation under CLM Act not required	-33.93356078	151.0736274
ROSEVILLE	Mobil Service Station	2 Boundary STREET	Service Station	Regulation under CLM Act not required	-33.78769177	151.1796011
ROSEVILLE CHASE	Coles Express Roseville Chase	388 Eastern Valley WAY	Service Station	Regulation under CLM Act not required	-33.78337722	151.1973901
ROZELLE	Caltex Service Station	121 Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.86252996	151.168497
ROZELLE	7-Eleven (former Mobil) Service Station	178-180 (176-184) Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.8630268	151.1680857
ROZELLE	Kennards Rozelle	15-39 Wellington STREET	Other Petroleum	Regulation under CLM Act not required	-33.86176757	151.1686519
ROZELLE	White Bay Power Station	Robert STREET	Other Industry	Regulation under CLM Act not required	-33.86674636	151.1772204

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
ROZELLE	BP Service Station	Corner Darling Street and Thornton STREET	Service Station	Regulation under CLM Act not required	-33.8591647	151.1716591
RUFUS RIVER	SA Water Depot - Rufus River	Old Wentworth STREET	Other Petroleum	Regulation under CLM Act not required	-34.04191512	141.2679475
RUSHCUTTERS BAY	d'Albora Marinas	1b New Beach ROAD	Other Industry	Contamination currently regulated under POEO Act	-33.87351297	151.2345082
RUTHERFORD	Rutherford Transpacific	11 Kyle STREET	Other Industry	Regulation under CLM Act not required	-32.71105203	151.500311
RUTHERFORD	Shell Coles Express Service Station Rutherford	118 New England HIGHWAY	Service Station	Regulation under CLM Act not required	-32.7208703	151.5394595
RUTHERFORD	Caltex Service Station	134-138 New England HIGHWAY	Service Station	Regulation under CLM Act not required	-32.7202589	151.5381526
RUTHERFORD	Transpacific Industrial Services/Nationwide Oil Pty Ltd	99 Kyle STREET	Chemical Industry	Regulation under CLM Act not required	-32.71262159	151.5013865
RYDALMERE	Caltex Service Station	309 Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.81196193	151.0371185
RYDALMERE	Mitsubishi Electric	348 Victoria ROAD	Other Industry	Contamination currently regulated under CLM Act	-33.81040138	151.0392812
RYDALMERE	Rheem Australia	1 Alan STREET	Other Industry	Contamination formerly regulated under the CLM Act	-33.81545013	151.0295476
RYDALMERE	BP Service Station	265 Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.8109483	151.0328101
RYDALMERE	Hunter Douglas	Victoria ROAD	Chemical Industry	Regulation under CLM Act not required	-33.81009112	151.0384732
RYDALMERE	United Petroleum (former 7-Eleven) Service Station Rydalmere	262-272 Victoria ROAD	Service Station	Regulation under CLM Act not required	-33.81006724	151.032377
RYDE	Shell Coles Express Ryde	45 Lane Cove ROAD	Service Station	Regulation under CLM Act not required	-33.80726028	151.109981
RYDE	Caltex Service Station	110 Lane Cove ROAD	Service Station	Regulation under CLM Act not required	-33.80142973	151.1137925
RYDE	7-Eleven (former Mobil) Service Station	326-328 Blaxland ROAD	Service Station	Regulation under CLM Act not required	-33.80242183	151.1004278

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
RYDE	Ryde Bus Depot	51 - 75 Buffalo ROAD	Other Petroleum	Regulation under CLM Act not required	-33.81679771	151.1225255
SANCTUARY POINT	United Service Station, Sanctuary Point	147 Larmer AVENUE	Service Station	Regulation under CLM Act not required	-35.09918861	150.6329537
SANDGATE	Caltex Service Station Sandgate	162 Maitland ROAD	Service Station	Regulation under CLM Act not required	-32.86501596	151.706161
SANDGATE	North Limited Storage Handling facility	Maitland ROAD	Other Industry	Contamination formerly regulated under the CLM Act	-32.86598453	151.7012866
SANS SOUCI	7-Eleven (Former Mobil) Service Station	474 Rocky Point ROAD	Service Station	Regulation under CLM Act not required	-33.99088939	151.1333779
SANS SOUCI	BP Sans Souci	520 Rocky Point ROAD	Service Station	Contamination currently regulated under CLM Act	-33.99246353	151.1323243
SANS SOUCI	Kendall Street Reserve	Lawson Street and Kendall STREET	Landfill	Under preliminary investigation order	-33.99966431	151.13005
SANS SOUCI	Former Service Station	542-544 Rocky Point ROAD	Service Station	Contamination was addressed via the planning process (EP&A Act)	-33.99376148	151.1316131
SANS SOUCI	Former 7-Eleven Ramsgate	368 Rocky Point ROAD	Service Station	Contamination formerly regulated under the CLM Act	-33.98615125	151.1359961
SCONE	Shell Coles Express Service Station	91- 93 Kelly STREET	Service Station	Contamination currently regulated under CLM Act	-32.04715941	150.8676346
SCONE	Scone Works Depot	220 Susan STREET	Other Petroleum	Regulation under CLM Act not required	-32.04444892	150.879152
SCONE	Mobil Scone Airport Elt	8 Walter Pye AVENUE	Other Petroleum	Regulation under CLM Act not required	-32.03596733	150.8323698
SCONE	BP - Former Depot	Scone St, Guernsey St & Susan STREET	Service Station	Contamination formerly regulated under the CLM Act	-32.04599284	150.8662046
SCONE	BP Scone	26 Kelly STREET	Service Station	Under assessment	-32.04033034	150.86549
SCONE	BP Scone Service Station	58 Kelly STREET	Service Station	Regulation being finalised	-32.043776	150.866236
SEVEN HILLS	7-Eleven (Former Mobil) Service Station Seven Hills	151 Prospect HIGHWAY	Service Station	Regulation under CLM Act not required	-33.76894646	150.9427004

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
SEVEN HILLS	Australia Post	3 Powers ROAD	Unclassified	Regulation under CLM Act not required	-33.77434009	150.9395495
SEVEN HILLS	Car Park (Former Brickworks / Warehouse)	1 Powers ROAD	Other Industry	Regulation under CLM Act not required	-33.77387442	150.9379787
SEVEN HILLS	BP-branded Jasbe Petroleum Service Station	156 Prospect HIGHWAY	Service Station	Regulation under CLM Act not required	-33.76906502	150.9414821
SEVEN HILLS	Caltex Service Station	38 Abbott ROAD	Service Station	Regulation under CLM Act not required	-33.76692649	150.9548271
SEVEN HILLS	Caltex Service Station Seven Hills	105 Station ROAD	Service Station	Regulation under CLM Act not required	-33.77435881	150.9448733
SEVEN HILLS	Former Australian Waste Oil Refineries Site	27 Powers ROAD	Other Industry	Contamination formerly regulated under the CLM Act	-33.77536127	150.9511122
SHELLY BEACH	Former Shelly Beach Landfill	Oaks AVENUE	Landfill	Regulation under CLM Act not required	-33.36700551	151.4913631
SHORTLAND	Former Astra Street Landfill	2 (part) & 28 (part) Astra STREET	Landfill	Contamination currently regulated under CLM Act	-32.86716222	151.6966948
SHORTLAND	Tuxford Park landfill	10 King STREET	Landfill	Regulation under CLM Act not required	-32.87721139	151.6936837
SHORTLAND	Former Lorna St landfill	8/475 Sandgate ROAD	Landfill	Regulation under CLM Act not required	-32.87888726	151.7023245
SHORTLAND	7-Eleven (Former BP) Service Station	298-302 Sandgate ROAD	Service Station	Regulation under CLM Act not required	-32.8861645	151.6953912
SILVERWATER	Former Silverwater Landfill	Carnarvon ROAD	Landfill	Contamination currently regulated under CLM Act	-33.83506394	151.033214
SILVERWATER	Vacant property	103-105 Silverwater ROAD	Other Industry	Regulation under CLM Act not required	-33.83831374	151.0472576
SILVERWATER	Storage Facility	54-58 Derby STREET	Unclassified	Under assessment	-33.83855869	151.0478649
SILVERWATER	Former Printing Facility	46-58 Derby STREET	Unclassified	Under assessment	-33.83855869	151.0478649
SILVERWATER	Silverwater Correctional Complex	Holker STREET	Landfill	Regulation under CLM Act not required	-33.82944797	151.0567486

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
SINGLETON	BP Service Station Singleton	53 George (Cnr Macquarie St) STREET	Other Petroleum	Regulation under CLM Act not required	-32.56182325	151.1748054
SINGLETON	Singleton Gasworks	55-57 John STREET	Gasworks	Contamination formerly regulated under the CLM Act	-32.56774715	151.1658188
SINGLETON	Shell Coles Express Service Station	69-73 George STREET	Service Station	Regulation under CLM Act not required	-32.56297156	151.1755215
SINGLETON	Mobil Singleton Airport Elt	74B Range ROAD	Other Petroleum	Regulation under CLM Act not required	-32.60270846	151.1944828
SINGLETON	Putty Saw Mill	(via Singleton) Putty ROAD	Other Industry	Contamination currently regulated under CLM Act	-32.99958725	150.7111684
SINGLETON	NSW Mines Rescue Services - Singleton	6 Lachlan AVENUE	Other Industry	Regulation under CLM Act not required	-32.54537821	151.156584
SMITHFIELD	Caltex Smithfield	16-18 Tait STREET	Service Station	Regulation under CLM Act not required	-33.84596441	150.9435497
SMITHFIELD	Freestones	1 Hume ROAD	Other Petroleum	Regulation under CLM Act not required	-33.83577694	150.9310112
SMITHFIELD	Liquip International	13 Hume ROAD	Other Industry	Regulation under CLM Act not required	-33.83802635	150.9319034
SMITHFIELD	Coles Express (former Mobil) Service Station	678 The Horsley Drive, corner Smithfield ROAD	Service Station	Regulation under CLM Act not required	-33.85376154	150.9400104
SMITHFIELD	Former Landfill	Little STREET	Landfill	Contamination being managed via the planning process (EP&A Act)	-33.85025253	150.9411561
SOUTH ALBURY	BP Border Service Station	Corner Ebden Street and Wodonga PLACE	Service Station	Contamination currently regulated under CLM Act	-36.08875942	146.9093882
SOUTH BOWENFELS	Shell Coles Express Service Station	Lot 1 Great Western HIGHWAY	Service Station	Regulation under CLM Act not required	-33.50589001	150.1238487
SOUTH COOGEE	Caltex South Coogee Service Station	169-173 Malabar ROAD	Service Station	Regulation under CLM Act not required	-33.93233184	151.2574377
SOUTH GRAFTON	Shell Coles Express Service Station	91 Bent STREET	Service Station	Regulation under CLM Act not required	-29.70605829	152.9400329
SOUTH GRAFTON	Former United (former Mobil) Service Station	Corner Pacific Highway and Charles STREET	Service Station	Regulation under CLM Act not required	-29.70814828	152.9412928

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
SOUTH GRAFTON	Former Caltex Service Station	46-58 Schwinghammer STREET	Service Station	Regulation under CLM Act not required	-29.71149672	152.9453337
SOUTH GRAFTON	Former Caltex Depot South Grafton	72-82 Swallow ROAD	Other Petroleum	Regulation under CLM Act not required	-29.73168549	152.944024
SOUTH GRAFTON	Caltex Service Station	Pacific Hwy Cnr Gwyder HIGHWAY	Service Station	Regulation under CLM Act not required	-29.70739015	152.9425508
SOUTH GRANVILLE	Enhance Service Station South Granville	2 Rawson ROAD	Service Station	Regulation under CLM Act not required	-33.86366193	151.0088768
SOUTH KEMPSEY	Caltex Service Station	52 Lachlan STREET	Service Station	Regulation under CLM Act not required	-31.09361084	152.8370796
SOUTH LISMORE	North Coast Petroleum (Former Mobil) Depot Lismore	19-21 Elliot ROAD	Other Petroleum	Regulation under CLM Act not required	-28.81212046	153.2661935
SOUTH LISMORE	Former Mobil Service Station	126 - 128 Union STREET	Service Station	Regulation under CLM Act not required	-28.81242175	153.267541
SOUTH LISMORE	Caltex Service Station	237 Union STREET	Service Station	Regulation under CLM Act not required	-28.82052708	153.2648111
SOUTH LISMORE	Former Mobil Depot	26-32 Phyllis STREET	Other Petroleum	Regulation under CLM Act not required	-28.81005206	153.2660073
SOUTH MURWILLUMBAH	Former Caltex Depot	39 Lundberg DRIVE	Service Station	Regulation under CLM Act not required	-28.332622	153.4212884
SOUTH MURWILLUMBAH	Caltex Service Station	1-7 Buchanan (Cnr Tweed Valley Way) STREET	Service Station	Regulation under CLM Act not required	-28.32687988	153.4093274
SOUTH MURWILLUMBAH	Former Mobil Depot	45 Wardrop STREET	Other Petroleum	Regulation under CLM Act not required	-28.33421395	153.3993772
SOUTH NOWRA	Caltex South Nowra	100 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-34.90516081	150.6029621
SOUTH PENRITH	7-Eleven Service Station	45 Aspen STREET	Service Station	Regulation under CLM Act not required	-33.77727694	150.7107228
SOUTH TAMWORTH	Coles Express Tamworth	251 - 253 Goonoo Goonoo ROAD	Service Station	Contamination currently regulated under CLM Act	-31.1118945	150.9228523
SOUTH TAMWORTH	Caltex Service Station	2 Kathleen Street, corner Kent STREET	Service Station	Regulation under CLM Act not required	-31.10361712	150.9186343

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
SOUTH WENTWORTHVILLE	Aldi Stores Development	331-339 Great Western HIGHWAY	Metal Industry	Regulation under CLM Act not required	-33.81605854	150.9697429
SOUTH WENTWORTHVILLE	Caltex Service Station	313 Great Western HIGHWAY	Service Station	Regulation under CLM Act not required	-33.81643692	150.9718802
SOUTH WEST ROCKS	Former Trial Bay Caltex Depot	Phillip DRIVE	Other Petroleum	Regulation under CLM Act not required	-30.89190078	153.0573056
SOUTH WEST ROCKS	Former Shell Trial Bay Depot	Phillip DRIVE	Other Petroleum	Regulation under CLM Act not required	-30.89273836	153.0612772
SOUTH WEST ROCKS	Residential area and Reserve opposite Former Caltex terminal	Phillip DRIVE	Other Petroleum	Regulation under CLM Act not required	-30.89172594	153.0573164
SPRINGVALE	Springvale Colliery	Castlereagh HIGHWAY	Other Industry	Regulation under CLM Act not required	-33.40334736	150.1070462
ST CLAIR	7-Eleven (former Mobil) Service Station	4 Endeavour AVENUE	Service Station	Regulation under CLM Act not required	-33.79430926	150.7885793
ST IVES	7-Eleven (former Mobil) St Ives Service Station	157-159 Mona Vale Road, corner Putarri AVENUE	Service Station	Regulation under CLM Act not required	-33.73265301	151.1563899
ST IVES	Caltex Service Station	452 Mona Vale ROAD	Service Station	Regulation under CLM Act not required	-33.70752272	151.187545
ST IVES	Caltex Service Station	164 Mona Vale ROAD	Service Station	Regulation under CLM Act not required	-33.7307595	151.1570462
ST IVES	Caltex Service Station St Ives	363 Mona Vale ROAD	Service Station	Regulation under CLM Act not required	-33.7168971	151.1735263
ST IVES	Shell Service Station	179-181 Mona Vale ROAD	Service Station	Contamination formerly regulated under the CLM Act	-33.73124859	151.1575827
ST LEONARDS	Telstra Data Centre	4A Herbert STREET	Other Petroleum	Regulation under CLM Act not required	-33.81873741	151.1914222
ST MARYS	Former Woolworths Service Station	120-128 Forrester ROAD	Service Station	Regulation under CLM Act not required	-33.75525115	150.7752897
ST MARYS	7-Eleven (former Mobil) Service Station	2 Christie STREET	Service Station	Regulation under CLM Act not required	-33.74790843	150.7767667
ST MARYS	7-Eleven (former Mobil) Service Station	2 Wilson STREET	Service Station	Regulation under CLM Act not required	-33.77790415	150.771689

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
ST MARYS	Solveco	38 LINKS ROAD	Other Industry	Contamination currently regulated under CLM Act	-33.738673	150.771554
ST MARYS	Integral Energy Mt Druitt Transmission Substation	69 Kurrajong North ROAD	Other Industry	Regulation under CLM Act not required	-33.76376093	150.7921691
ST MARYS	Caltex St Marys Service Station	Wordoo St Cnr Forrester ROAD	Service Station	Regulation under CLM Act not required	-33.75334263	150.7755489
ST MARYS	Chemcolour Industries	19-25 Anne STREET	Chemical Industry	Regulation under CLM Act not required	-33.75027071	150.7725397
ST MARYS	Old Drycleaning location	1-7 Queen STREET	Other Industry	Under assessment	-33.73873	150.771747
ST PETERS	Cooks River Rail Terminal	20 Canal ROAD	Unclassified	Regulation under CLM Act not required	-33.91943986	151.1726689
ST PETERS	Camdenville Park	May STREET	Other Industry	Regulation under CLM Act not required	-33.90911815	151.176951
ST PETERS	Former Tidyburn Facility	53 Barwon Park ROAD	Chemical Industry	Contamination formerly regulated under the CLM Act	-33.9130091	151.1809912
ST PETERS	BP Express Service Station	2 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-33.90982281	151.1809936
ST PETERS	Former Industrial Manufacturing Facility (Taubman's Paints)	75 Mary STREET	Other Industry	Regulation under CLM Act not required	-33.91307297	151.1731383
ST PETERS	Burrows Industrial Estate	1-3 Burrows ROAD	Landfill	Under assessment	-33.920035	151.17854
STANMORE	125 Corunna Road	125 Corunna ROAD	Unclassified	Regulation under CLM Act not required	-33.88937382	151.1644589
STOCKTON	Former Coroba Landfill	310 Fullerton STREET	Landfill	Regulation under CLM Act not required	-32.89807537	151.7896891
STRATHFIELD	7-Eleven (former Mobil) Service Station	577 Liverpool ROAD	Service Station	Regulation under CLM Act not required	-33.88736091	151.0743474
STRATHFIELD SOUTH	Former Landfill Site	7-9 Dunlop STREET	Landfill	Regulation under CLM Act not required	-33.89509698	151.0796751
STROUD	Stroud Fuel Supplies (Former Caltex) Service Station	1 Cowper STREET	Service Station	Regulation under CLM Act not required	-32.39092749	151.9563089

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
SUFFOLK PARK	BP Service Station	207-209 Broken Head ROAD	Service Station	Regulation under CLM Act not required	-28.68800088	153.6083821
SUFFOLK PARK	Suffolk Park dip site	Cnr Broken Head Road & Beech DRIVE	Cattle Dip	Regulation under CLM Act not required	-28.6874242	153.6072824
SURRY HILLS	Woolworths Petrol Surry Hills	475 Cleveland STREET	Service Station	Regulation under CLM Act not required	-33.89223271	151.2161434
SURRY HILLS	Former Legion Cabs (Trading) Cooperative	81 & 81A (Formerly 69 - 81) Foveaux STREET	Service Station	Regulation under CLM Act not required	-33.88470082	151.2107944
SURRY HILLS	Ausgrid Road Reserve	Mary STREET	Other Industry	Regulation under CLM Act not required	-33.88292195	151.2095176
SUTHERLAND	United Service Station and Sutherland Reservoir	1 to 3 Oxford STREET	Service Station	Contamination currently regulated under CLM Act	-34.029532	151.0579906
SUTHERLAND	7-Eleven Service Station	693 Old Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-34.02976735	151.0588789
SUTTON FOREST	Coles Express Sutton Forest West	Hume HIGHWAY	Service Station	Regulation under CLM Act not required	-34.60808989	150.2250592
SWANSEA	Caltex Service Station	126 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.08811841	151.6381764
SWANSEA	Swansea 1 - Wastewater Pumping Station	137 and 137a Northcote AVENUE	Other Industry	Under assessment	-33.09745672	151.6473257
SYDENHAM	SRA Land	117 Railway PARADE	Other Industry	Regulation under CLM Act not required	-33.91560723	151.1656846
SYDENHAM	Sydenham XPT Maintenance Facility	Way STREET	Other Industry	Regulation under CLM Act not required	-33.91698468	151.1614089
SYDNEY	Interpro House (OSP 46581)	447 Kent STREET	Other Petroleum	Regulation under CLM Act not required	-33.87225413	151.204761
SYDNEY	Eurostar Dry Cleaners	100 Oxford STREET	Chemical Industry	Regulation under CLM Act not required	-33.879333	151.215668
SYDNEY OLYMPIC PARK	RMS Western Precinct	14A-14E and 16 Hill ROAD	Other Petroleum	Regulation under CLM Act not required	-33.82239777	151.0758664
SYDNEY OLYMPIC PARK	Haslams Creek South Area 3	At Kronos Hill, Kevin Coombes AVENUE	Landfill	Contamination formerly regulated under the CLM Act	-33.84113059	151.0602966

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
SYDNEY OLYMPIC PARK	Bicentennial Park	Bicentennial DRIVE	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.84456248	151.0788116
SYDNEY OLYMPIC PARK	Former Golf Driving Range Landfill	Sarah Durack AVENUE	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.85358517	151.0713987
SYDNEY OLYMPIC PARK	Kronos Hill Landfill	Kevin Coombes AVENUE	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.84014442	151.0649521
SYDNEY OLYMPIC PARK	Wilson Park (Former oil gas plant site)	Newington ROAD	Gasworks	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.82633586	151.0534322
SYDNEY OLYMPIC PARK	Woo-la-ra Landfill	Hill ROAD	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.82695807	151.07282
SYDNEY OLYMPIC PARK	Aquatic Centre Carpark Landfill	Shane Gould AVENUE	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.85093439	151.0656713
SYDNEY OLYMPIC PARK	Blaxland Common Landfill	Jamieson STREET	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.82638382	151.05972
SYLVANIA	Caltex Service Station	61 Port Hacking ROAD	Service Station	Regulation under CLM Act not required	-34.0140089	151.104212
SYLVANIA HEIGHTS	Caltex Service Station - Sylvania Heights	414-416 Princes HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-34.02361051	151.0895394
TALBINGO	Old Town Landfill	Bridle STREET	Landfill	Regulation under CLM Act not required	-35.59018237	148.3041771
TALBINGO	T3 Spoil dump and adjoining river sediments	Off Snowy Mountains HIGHWAY	Landfill	Contamination formerly regulated under the CLM Act	-35.6177268	148.2926158
TALBINGO	Former grit blasting site	Old Damsite ROAD	Other Industry	Regulation under CLM Act not required	-35.60894551	148.3030165
TAMINDA	Mobil Depot	9 Hinkler ROAD	Other Petroleum	Regulation under CLM Act not required	-31.09584286	150.9040493
TAMWORTH	Caltex Tamworth Service Station	109 Gunnedah ROAD	Service Station	Regulation under CLM Act not required	-31.09723226	150.8955299
TAMWORTH	Curlew Crescent	19-29 Curlew CRESCENT	Metal Industry	Regulation under CLM Act not required	-31.06963607	150.9069306
TAMWORTH	Former Service Station, Fitzpatrick Super Fund, Tamworth	210 Goonoo Goonoo ROAD	Service Station	Regulation under CLM Act not required	-31.10613594	150.9234143

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
TAMWORTH	Gunnedah Road Site	49 GUNNEDAH ROAD	Other Industry	Contamination formerly regulated under the CLM Act	-31.09574904	150.9021583
TAMWORTH	Elovera Former Sheep Dip	730 Ascot Calala ROAD	Cattle Dip	Regulation under CLM Act not required	-31.1801846	150.962897
TAMWORTH	Housing NSW	29 -33 White STREET	Other Petroleum	Regulation under CLM Act not required	-31.0915651	150.9357811
TAMWORTH	BP Tamworth Service Station and Depot	27-29 Gunnedah ROAD	Other Petroleum	Under assessment	-31.09642128	150.9058193
TAMWORTH	Former Mobil Service Station	373-375 Armidale ROAD	Service Station	Regulation under CLM Act not required	-31.10122679	150.9441341
TAMWORTH	Kensell's Mitsubishi	11-14 Kable AVENUE	Other Petroleum	Regulation under CLM Act not required	-31.08921565	150.9273063
TAMWORTH	Caltex Star Tamworth	21 White STREET	Service Station	Regulation under CLM Act not required	-31.09255137	150.9341709
TAMWORTH	Former Service Station Tamworth	(Cnr Scott Rd) 254-256 Goonoo Goonoo ROAD	Service Station	Regulation under CLM Act not required	-31.1118945	150.9228523
TAMWORTH	Cleanaway Operations Pty Ltd	31 Gunnedah ROAD	Other Industry	Under assessment	-31.09621029	150.9051567
TAMWORTH	Elgas Depot (former gasworks)	115 Marius STREET	Gasworks	Under preliminary investigation order	-31.08546191	150.926437
TAMWORTH	Proposed ALDI Store Tamworth	194-196 Peel STREET	Other Industry	Under assessment	-31.08522053	150.9260054
TARAGO	Tarago Railway Siding	Goulburn STREET	Other Industry	Contamination currently regulated under CLM Act	-35.0659976	149.6507068
TARCUTTA	Mobil Service Station	(Hume Highway) 32 Sydney STREET	Service Station	Contamination formerly regulated under the CLM Act	-35.2772942	147.73574
TAREE	Caltex Taree	12 Pitt STREET	Service Station	Regulation under CLM Act not required	-31.90551738	152.4783334
TAREE	Former Caltex Depot	44 Stevenson STREET	Other Petroleum	Regulation under CLM Act not required	-31.90563595	152.4640848
TAREE	Former BP Service Station (Reliance Petroleum)	150 Manning River DRIVE	Service Station	Regulation under CLM Act not required	-31.93842026	152.4682056

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
TAREE	Former Shell Depot	53-55 Stevenson STREET	Other Petroleum	Regulation under CLM Act not required	-31.90514622	152.4649706
TAREE	United Service Station and Former Mobil Depot	85 Muldoon Street, corner Grey Gum ROAD	Service Station	Regulation under CLM Act not required	-31.89744109	152.4508569
TAREE	Caltex Service Station	104-106 Commerce STREET	Service Station	Regulation under CLM Act not required	-31.90720519	152.4500926
TAREE	Footpath in front of the former BP service station	53-55 Victoria STREET	Service Station	Regulation under CLM Act not required	-31.91015653	152.4659073
TAREN POINT	Former Oyster Farm	Part 2R Alexander Avenue and part 98 Woodlands ROAD	Other Industry	Contamination was addressed via the planning process (EP&A Act)	-34.01714802	151.1252694
TAREN POINT	Former Oyster Farmer	1A Atkinson ROAD	Other Industry	Regulation under CLM Act not required	-34.02081803	151.1283282
TAREN POINT	Former manufacturing site	46-50 Bay ROAD	Other Industry	Regulation under CLM Act not required	-34.0236184	151.1231649
TAREN POINT	Mangrove Lane Cycle pathway	Mangrove LANE	Unclassified	Regulation under CLM Act not required	-34.02404025	151.1324783
TAREN POINT	Caltex Service Station	114 Taren Point ROAD	Service Station	Regulation under CLM Act not required	-34.02065958	151.1218938
TAREN POINT	Shell Coles Express Service Station	99-103 Parraweena ROAD	Service Station	Regulation under CLM Act not required	-34.02630233	151.1200897
TAREN POINT	Redevelopment Site	25 Bay ROAD	Landfill	Regulation under CLM Act not required	-34.02119591	151.1274727
TELARAH	Former Ausgrid Depot	Green STREET	Other Industry	Regulation under CLM Act not required	-32.7276446	151.5269745
TELARAH	ACIRL	5 Junction STREET	Other Industry	Regulation under CLM Act not required	-32.73457183	151.5400128
TEMORA	Woolworths Caltex Temora	98-100 Hoskins STREET	Service Station	Regulation under CLM Act not required	-34.44324584	147.5318667
TEMPE	Tempe Depot	1a Gannon STREET	Other Petroleum	Regulation under CLM Act not required	-33.92408255	151.1596469
TEMPE	Caltex Service Station	775 Princes HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-33.9253681	151.1596532

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
TEMPE	Former Tempe Tip	South STREET	Landfill	Contamination currently regulated under CLM Act	-33.9255792	151.1668117
TEMPE	Railcorp Site Renwick Street	Renwick STREET	Other Industry	Regulation under CLM Act not required	-33.91997709	151.1576058
TENTERFIELD	United Tenterfield Service Station	94 Rouse STREET	Service Station	Under assessment	-29.062753	152.016724
TERALBA	Lake Macquarie Teralba Sanitary Depot	Griffen ROAD	Landfill	Regulation under CLM Act not required	-32.9372059	151.6214528
TERALBA	Lucky's Scrap Metal Yard	21 Racecourse ROAD	Metal Industry	Contamination currently regulated under CLM Act	-32.946805	151.61698
TERANIA CREEK	Former Izzards Cattle Tick Dip	Wallace ROAD	Cattle Dip	Contamination formerly regulated under the CLM Act	-28.65425776	153.2767438
THE ROCKS	Dawes Point Park	Hickson ROAD	Other Industry	Under assessment	-33.855041	151.209547
THIRLMERE	Thirlmere Rail Heritage Museum	10 Barbour ROAD	Other Industry	Regulation under CLM Act not required	-34.20689245	150.5693902
THORNLEIGH	Caltex Thornleigh Service Station	192-198 Pennant Hills (Cnr Duffy Ave) ROAD	Service Station	Regulation under CLM Act not required	-33.72660793	151.08364
THORNLEIGH	Coles Express Service Station Thornleigh	188 - 190 Pennant Hills ROAD	Service Station	Regulation under CLM Act not required	-33.72502184	151.0850569
THORNTON	Energy Australia Thornton Pole Yard	55 Weakleys DRIVE	Other Industry	Regulation under CLM Act not required	-32.79973875	151.6374998
TIGHES HILL	Holcim Australia Cement Batching Plant	340 Industrial DRIVE	Other Industry	Regulation under CLM Act not required	-32.90532418	151.7574857
TIGHES HILL	SRA Land	73 Elizabeth STREET	Unclassified	Regulation under CLM Act not required	-32.90795794	151.754631
TIGHES HILL	Former Ampol Depot	94 Elizabeth STREET	Other Petroleum	Regulation under CLM Act not required	-32.90658137	151.757239
TIGHES HILL	Former Mobil Terminal	110 Elizabeth STREET	Other Petroleum	Contamination formerly regulated under the CLM Act	-32.90600406	151.7586907
TOCUMWAL	Former Mobil Depot	250 Murray STREET	Other Petroleum	Regulation under CLM Act not required	-35.79180653	145.5648214

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
TOCUMWAL	Former Mobil Depot	79-83 Deniliquin ROAD	Other Petroleum	Regulation under CLM Act not required	-35.80914914	145.5585528
TOMAGO	Balcombe Sweat Furnace	26 Laverick AVENUE	Metal Industry	Regulation under CLM Act not required	-32.82557395	151.7056416
TOMAGO	Former Hydromet Site	25 School DRIVE	Metal Industry	Under assessment	-32.8301553	151.7300603
TOMAGO	RZM Site - Tomago	1877 Pacific HIGHWAY	Other Industry	Regulation under CLM Act not required	-32.81419433	151.6985159
TOMERONG	Log Cabin Service Station (United Petroleum)	D1300 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-35.01820959	150.5779687
TOONGABBIE	7-Eleven (Former Mobil) Service Station Toongabbie	3 Metella ROAD	Service Station	Regulation under CLM Act not required	-33.78692357	150.9462837
TOORMINA	Caltex Service Station	2 Minorca PLACE	Service Station	Regulation under CLM Act not required	-30.35229568	153.0906606
TORONTO	Coles XP (Former Mobil) Toronto Service Station	133 - 137 Cary (Cnr Thorne St) STREET	Service Station	Regulation under CLM Act not required	-33.01187681	151.5930879
TORONTO	BP Toronto Service Station	132 Cary (Cnr Donnelly Ave) STREET	Service Station	Regulation under CLM Act not required	-33.01144673	151.5937863
TORONTO	Toronto Hotel	74 Victory PARADE	Unclassified	Regulation under CLM Act not required	-33.01214835	151.5958127
TORONTO	Caltex Service Station	147 Cary STREET	Service Station	Regulation under CLM Act not required	-33.01288007	151.5928388
TORONTO	155B Brighton Avenue, Toronto NSW 2283	155B Brighton AVENUE	Other Industry	Under assessment	-33.014887	151.599757
TOUKLEY	Former Shell Toukley Autoport	211 Main ROAD	Service Station	Regulation under CLM Act not required	-33.26383791	151.5386268
TOUKLEY	7-Eleven Australia	287 Main ROAD	Service Station	Regulation under CLM Act not required	-33.26469166	151.5462414
TRANGIE	Caltex Service Station	(Mitchell Hwy) 76 Narromine STREET	Service Station	Regulation under CLM Act not required	-32.03234676	147.985164
TUGGERAH	BP Tuggerah	100 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.30578167	151.4198083

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State Overview

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Real Time Data - Rivers And Streams

Daily River Reports
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Real Time Data - Major Dams

Groundwater (Telemetered data)
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Real Time Data - Bores

All Groundwater Site details
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All Groundwater Map
- North Coast Region
- Hunter Region
- Greater Sydney Region
- South Coast Region
- Northwest Region
- Central West Region
- Southwest Region
  - Upper Murray River Basin
  - Murray River Basin
  - **Murrumbidgee River Basin**
  - Lake George Basin
  - Benanee River Basin
- Far West Region
- Great Artesian Basin
- Coal Basins

Meteorology
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Real Time Data - Weather Stations

Hunter Integrated Telemetry System
Hunter Integrated Telemetry System

bandwidth high low

glossary and metadata

All Groundwater Site Details » WEB_GW_MENU » WEB_GW_STHWEST

Murrumbidgee River Basin

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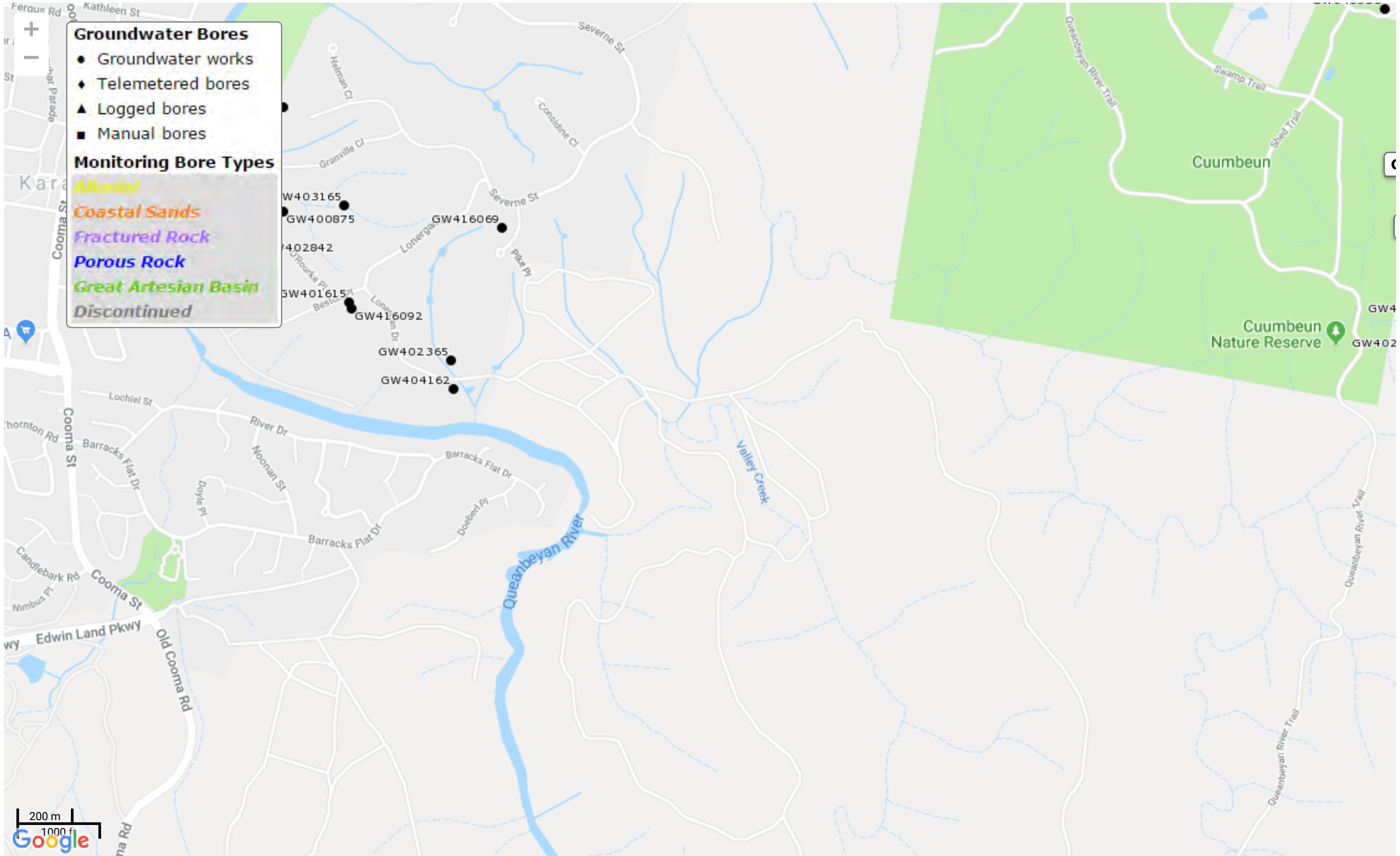
All data times are Eastern Standard Time

Map

current site: GW416069



Scale = 1 : 14K

contact WaterNSW

NSW Office of Water
Work Summary

GW400875

Licence: 40BL186654

Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 30/07/1997

Final Depth: 36.60 m
Drilled Depth: 36.60 m

Contractor Name: Bungendore Water Bores
Driller:
Assistant Driller:

Property: N/A
GWMA: -
GW Zone: -

Standing Water Level: 16.000
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.042	LT 155 DP 713859
Licensed:	MURRAY	QUEANBEYAN	Whole Lot 155//713859

Region: 40 - Murrumbidgee
CMA Map:

River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6083900.0
Easting: 703588.0
Latitude: 35°22'02.9"S
Longitude: 149°14'27.4"E

GS Map: -
MGA Zone: 0
Coordinate Source: GIS - Geographic Information System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	36.60	200			Unknown
1	1	Casing	Pvc Class 9	0.00	36.60	150			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
24.39	25.91	1.52	Unknown	16.00		0.25			
32.01	33.53	1.52	Unknown	16.00		1.01	33.53		

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	Fill loose shale	Fill	
1.00	9.00	8.00	Decomposed yellow shale	Invalid Code	

9.00	21.00	12.00	Soft fractured shale	Invalid Code	
21.00	36.00	15.00	Black shale	Invalid Code	

Remarks

***** End of GW400875 *****

NSW Office of Water
Work Summary

GW401615

Licence: 40BL188080

Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status:
Construct.Method: Rotary Air
Owner Type:

Commenced Date:
Completion Date: 06/12/2000

Final Depth: 73.00 m
Drilled Depth: 73.00 m

Contractor Name: J & L Drilling Pty Ltd
Driller: Leon Thomas Sharp
Assistant Driller:

Property: LOT 139 8 BESTON PLACE GREENLEIGH ESTATE QUEANBEYAN 2620
GWMA: -
GW Zone: -

Standing Water Level: 41.000
Salinity:
Yield: 0.200

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.042	LOT139 DP713859
Licensed:	MURRAY	QUEANBEYAN	Whole Lot 139//713859

Region: 40 - Murrumbidgee
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6083609.0
Easting: 703788.0

Latitude: 35°22'12.2"S
Longitude: 149°14'35.5"E

GS Map: -
MGA Zone: 0
Coordinate Source: Map Interpretation

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	73.00	203			Rotary Air
1	1	Casing	Pvc Class 9	-1.00	73.00	139	125		Glued
1	1	Opening	Slots - Vertical	55.00	61.00	139		1	PVC Class 9, SL: 200.0mm, A: 3.00mm
1	1	Opening	Slots - Vertical	67.00	73.00	139		1	PVC Class 9, SL: 200.0mm, A: 3.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
55.00	55.20	0.20	Unknown	41.00			56.00	02:00:00	
68.00	68.50	0.50	Unknown			0.20	71.00	02:00:00	

Geologists Log
Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments

(m)	(m)	(m)			
0.00	13.00	13.00	SHALE, YELLOW	Shale	
13.00	73.00	60.00	SHALE, GREY	Shale	

Remarks

***** End of GW401615 *****

NSW Office of Water
Work Summary

GW402365

Licence: 40BL189463
Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status:
Construct.Method: Rotary - Percussion (Down Hole Hammer)
Owner Type:

Commenced Date:
Completion Date: 21/05/2003
Final Depth: 79.00 m
Drilled Depth: 79.00 m

Contractor Name: Central West Water Drillers
Driller: Michael Patrick O'neill
Assistant Driller:

Property: N/A 22 LONERGAN DRIVE QUEANBEYAN 2620
GWMA: -
GW Zone: -
Standing Water Level: 18.000
Salinity:
Yield: 2.750

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.042	LT127 DP709217
Licensed:	MURRAY	QUEANBEYAN	Whole Lot 127//709217

Region: 40 - Murrumbidgee
CMA Map: 8727-3N

River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6083419.0
Easting: 704101.0
Latitude: 35°22'18.1"S
Longitude: 149°14'48.1"E

GS Map: -
MGA Zone: 0
Coordinate Source: Map Interpretation

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	79.00	175			Rotary - Percussion (Down Hole Hammer)
1	1	Casing	Pvc Class 9	-0.30	79.00	139	125		Driven into Hole, Riveted
1	1	Opening	Slots - Vertical	30.00	42.00	139		1	Casing - Hand Sawn Slot, PVC Class 9, SL: 200.0mm, A: 2.00mm
1	1	Opening	Slots - Vertical	54.00	72.00	139		1	Casing - Hand Sawn Slot, PVC Class 9, SL: 200.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
34.00	35.00	1.00	Unknown	18.00		0.25			
55.00	56.00	1.00	Unknown	18.00		0.50			
66.00	70.00	4.00	Unknown	18.00		2.00			

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	6.00	6.00	Shale, yellow	Shale	
6.00	20.00	14.00	Shale, grey	Shale	
20.00	44.00	24.00	Shale, black	Shale	
44.00	60.00	16.00	Shale, green	Shale	
60.00	79.00	19.00	Shale, black	Shale	

Remarks

21/05/2003: Form A Remarks:
Sump installed from 70 metres to 79 metres.

***** End of GW402365 *****

NSW Office of Water
Work Summary

GW402771

Licence: 40BL189608

Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s):

Work Type: Bore
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 03/10/2003

Final Depth: 66.00 m
Drilled Depth: 66.00 m

Contractor Name: Bungendore Water Bores
Driller: Daniel Robert Hill
Assistant Driller:

Property: N/A 9 O ROURKE PLACE QUEANBEYAN 2620
GWMA: -
GW Zone: -

Standing Water Level: 22.000
Salinity:
Yield: 1.063

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	LT153 DP713859
Licensed:	MURRAY	QUEANBEYAN	Whole Lot 153//713859

Region: 40 - Murrumbidgee
CMA Map: 8727-3N

River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6083848.0
Easting: 703503.0
Latitude: 35°22'04.6"S
Longitude: 149°14'24.0"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unidentified Location

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	66.00	200			Rotary - Air/Foam
1		Annulus	Waterworn/Rounded	0.00	66.00				Q:1.500m3
1	1	Casing	Pvc Class 9	0.00	66.00	160	152		Glued
1	1	Opening	Slots	30.00	66.00	160		1	Slotted In Hole, , SL: 150.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
22.00	22.00	0.00	Unknown	22.00					
45.00	48.00	3.00	Unknown	22.00					
58.00	60.00	2.00	Unknown	22.00					

Geologists Log
Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments

(m)	(m)	(m)			
0.00	0.30	0.30	soil	Soil	
0.30	15.00	14.70	Shale, soft weathered	Shale	
15.00	66.00	51.00	Shale, blacky grey	Shale	

Remarks

12/11/2009: Nat Carling, Updated coordinates (as existing were entered as a negative value, which is invalid), based in the centre of the authorised land.

***** End of GW402771 *****

NSW Office of Water
Work Summary

GW402778

Licence: 40BL189490

Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status:
Construct.Method: Rotary - Air/Foam
Owner Type:

Commenced Date:
Completion Date: 02/10/2003

Final Depth: 36.00 m
Drilled Depth: 36.00 m

Contractor Name: Bungendore Water Bores
Driller: Daniel Robert Hill
Assistant Driller:

Property: N/A 11 O ROURKE PLACE QUEANBEYAN 2620
GWMA: -
GW Zone: -

Standing Water Level: 19.000
Salinity:
Yield: 3.375

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	LT154 DP713859
Licensed:	MURRAY	QUEANBEYAN	Whole Lot 154//713859

Region: 40 - Murrumbidgee
CMA Map: 8727-3N

River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6083900.0
Easting: 703497.0
Latitude: 35°22'02.9"S
Longitude: 149°14'23.8"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	36.00	200			Rotary - Air/Foam
1		Annulus	Waterworn/Rounded	0.00	36.00				Graded, Q:1.200m3
1	1	Casing	Pvc Class 9	-0.50	36.00	160	152		Seated on Bottom, Driven into Hole, Screwed and Glued
1	1	Opening	Slots - Vertical	23.00	36.00	160		1	Casing - Hand Sawn Slot, PVC Class 9, SL: 150.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
23.00	24.00	1.00	Unknown	19.00		0.13			
26.00	28.00	2.00	Unknown	19.00		2.00			
32.00	34.00	2.00	Unknown	19.00		1.25		01:00:00	

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	SOIL	Soil	
0.30	16.00	15.70	SHALE, SOFT WEATHERED	Shale	
16.00	36.00	20.00	SHALE, HARD GREY	Shale	

Remarks

***** End of GW402778 *****

NSW Office of Water
Work Summary

GW402842

Licence: 40BL189772

Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status:
Construct.Method: Rotary - Air/Foam
Owner Type:

Commenced Date:
Completion Date: 30/11/2004

Final Depth: 60.00 m
Drilled Depth: 60.00 m

Contractor Name: Bungendore Water Bores
Driller: Daniel Robert Hill
Assistant Driller:

Property: N A 7 O' ROURKE PL QUEANBEYAN 2620
GWMA: -
GW Zone: -

Standing Water Level: 24.000
Salinity:
Yield: 2.250

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	
Licensed:	MURRAY	QUEANBEYAN	Whole Lot 152//713859

Region: 40 - Murrumbidgee
CMA Map: 8727-3N

River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6083811.0
Easting: 703514.0
Latitude: 35°22'05.8"S
Longitude: 149°14'24.5"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction
Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	60.00	200			Rotary - Air/Foam
1		Annulus	Waterworn/Rounded	0.00	60.00				Graded, Q:1.500m3
1	1	Casing	Pvc Class 9	-0.50	60.00	160	152		Screwed and Glued
1	1	Opening	Slots - Vertical	30.00	60.00	160		1	Casing - Hand Sawn Slot, PVC Class 9, SL: 120.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
36.00	38.00	2.00	Unknown	24.00		1.00			
53.00	55.00	2.00	Unknown	24.00		1.25		01:00:00	

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	SHALE, SURFACE ROCKS	Shale	
1.00	6.00	5.00	SHALE, SOFT BROWN	Shale	
6.00	17.00	11.00	SHALE, LIGHT BROWN	Shale	
17.00	60.00	43.00	SHALES, BLUE/BLACK DACITE	Shale	

Remarks

***** End of GW402842 *****

NSW Office of Water
Work Summary

GW403165

Licence: 40BL190601
Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 13/07/2005
Final Depth: 78.00 m
Drilled Depth: 78.00 m

Contractor Name:
Driller: Michael Patrick O'neill
Assistant Driller:

Property: N/A 6 GRANVILLE CLOSE QUEANBEYAN 2620
GWMA: -
GW Zone: -
Standing Water Level: 29.000
Salinity:
Yield: 3.250

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	LT109 DP705742
Licensed:	MURRAY	QUEANBEYAN	Whole Lot 109//705742

Region: 40 - Murrumbidgee
CMA Map: 8727-3N

River Basin: - Unknown
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6083916.0
Easting: 703778.0
Latitude: 35°22'02.2"S
Longitude: 149°14'34.9"E

GS Map: -
MGA Zone: 0
Coordinate Source: Map Interpretation

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	78.00	200			Rotary - Percussion (Down Hole Hammer)
1	1	Casing	Pvc Class 9	10.30	72.00	140	128		Glued
1	1	Opening	Slots - Vertical	66.00	74.00	140		1	PVC Class 9, SL: 200.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	Clay, red	Clay	
1.00	7.00	6.00	Clay, yellow	Clay	
7.00	20.00	13.00	Shale, yellow	Shale	

20.00	78.00	58.00	Shale, black	Shale	

Remarks

***** End of GW403165 *****

NSW Office of Water
Work Summary

GW404162

Licence: 40BL189243 **Licence Status:** CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date:
Completion Date: 23/05/2005

Final Depth: 100.00 m
Drilled Depth: 100.00 m

Contractor Name: Central West Water Drillers
Driller: Michael Patrick O'neill
Assistant Driller:

Property: N/A 35 LONERGAN DRIVE QUEANBEYAN 2620
GWMA:
GW Zone:

Standing Water Level: 22.000
Salinity: Good
Yield: 4.500

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	130//709217
Licensed:			

Region: 40 - Murrumbidgee **CMA Map:** 8727-3N

River Basin: 410 - MURRUMBIDGEE RIVER **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6083333.0 **Latitude:** 35°22'20.9"S
Elevation Source: Unknown **Easting:** 704109.0 **Longitude:** 149°14'48.5"E

GS Map: - **MGA Zone:** 0 **Coordinate Source:** GIS - Geographic Information System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	100.00	125			Rotary Air
1	1	Casing	Pvc Class 9	-0.30	90.00	125			Seated on Bottom,
1	1	Opening	Slots	90.00	100.00	125		1	PVC Class 9, Inline Glued

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
96.00	97.00	1.00	Unknown	22.00		4.50			

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	7.00	7.00	SHALE - YELLOW	Shale	

7.00	18.00	11.00	SHALE - GREY	Shale	
18.00	90.00	72.00	SHALE - RED/GREY	Shale	
90.00	100.00	10.00	LIMESTONE	Limestone	

Remarks

23/05/2005: Form A Remarks:
ENTERED BY PATRICIA EWERS ON 5TH FEBRUARY 2008. FORM AG - VERY FEW DETAILS PROVIDED.

INFORMATION NOT PROVIDED ON FORM:

NO INFORMATION ON SALINITY
NO INFORMATION ON PUMPING TESTS ON BORE COMPLETION
NO DETAILS ON CASING ATTACHMENT METHOD
NO DETAILS ON SLOT OPENING TYPE, ATTACHMENT METHOD AND APERTURE SIZE
NO DETAILS ON GRAVEL PACK
NO DETAILS ON BORE DEVELOPMENT
NO INFORMATION ON WHO CHOSE BORE LOCATION

***** End of GW404162 *****

NSW Office of Water
Work Summary

GW416069

Licence: 40BL190091
Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 19/07/2004
Final Depth: 113.00 m
Drilled Depth: 113.00 m

Contractor Name: Central West Water Drillers
Driller:
Assistant Driller:

Property: N/A 4 WOODMAN PLACE QUEANBEYAN 2620
GWMA:
GW Zone:
Standing Water Level: 74.000
Salinity: Good
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	162//733091
Licensed:			

Region: 40 - Murrumbidgee
CMA Map: 8727-3N

River Basin: 410 - MURRUMBIDGEE RIVER
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6083831.0
Easting: 704272.0
Latitude: 35°22'04.6"S
Longitude: 149°14'54.5"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	113.00	125			Unknown
1	1	Casing	Pvc Class 9	0.00	113.00	125			
1	1	Opening	Slots	72.00	78.00	125		1	PVC Class 9
1	1	Opening	Slots	96.00	107.00	125		1	PVC Class 9

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
72.00	78.00	6.00	Unknown						
96.00	107.00	11.00	Unknown						

Geologists Log
Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments

(m)	(m)	(m)			

Remarks

19/07/2004: Form A Remarks:
Helen Lester: Coordinates are taken from charted licence location.
Bore/Excavation Form.
No other details were provided.

***** End of GW416069 *****

NSW Office of Water
Work Summary

GW416092

Licence: 40WA411028
Licence Status: CURRENT

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 31/10/2007
Final Depth: 102.00 m
Drilled Depth:

Contractor Name: Central West Water Drillers
Driller: Michael Patrick O'neill
Assistant Driller:

Property: N/A 4 BESTON PLACE QUEANBEYAN 2620
GWMA:
GW Zone:
Standing Water Level: 32.000
Salinity:
Yield: 0.630

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	137//713859
Licensed:			

Region: 40 - Murrumbidgee
CMA Map: 8727-3N

River Basin: 410 - MURRUMBIDGEE RIVER
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6083590.0
Easting: 703793.0
Latitude: 35°22'12.8"S
Longitude: 149°14'35.8"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	102.00	0			(Unknown)
1	1	Casing	Pvc Class 9	-1.00	102.00	132			
1	1	Opening	Screen	72.00	78.00			1	PVC Class 9
1	1	Opening	Screen	90.00	96.00			1	PVC Class 9

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

31/10/2007: Form A Remarks:
Helen Lester: Coordinates are taken from charted licence location.
Bore/Excavation Form
No other details were provided.

***** End of GW416092 *****

NSW Office of Water
Work Summary

GW416490

Licence: 40BL189614
Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC, IRRIGATION

Work Type: Bore
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 04/01/2012
Final Depth: 66.00 m
Drilled Depth:

Contractor Name:
Driller: Unkown Unknown
Assistant Driller:

Property: N/A 5 O ROURKE PLACE QUEANBEYAN 2620
GWMA:
GW Zone:
Standing Water Level:
Salinity:
Yield: 1.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	MURRA	MURRA.42	151//713859
Licensed:			

Region: 40 - Murrumbidgee
CMA Map: 8727-3N
River Basin: 410 - MURRUMBIDGEE RIVER
Area/District:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6083708.0
Easting: 703496.0
Latitude: 35°22'09.2"S
Longitude: 149°14'23.9"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	66.00	150			Unknown

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

04/01/2012: Form A Remarks:

Helen Lester: Coordinates are taken from charted licence location.
Form AG
Completion Date entered as per signage of form.
PVC casing 150mm
No other details were provided.

***** End of GW416490 *****

50 YEARS AN EXTRAORDINARY JOURNEY

FINAL D R A F T

STAGE 3 CONTAMINATION ASSESSMENT, JUMPING CREEK QUEANBEYAN, NSW

Prepared for:

Canberra Investment Corporation Pty Ltd
PO BOX 1000
Civic Square ACT 2608

Report Date: 16 June 2010
Project Ref: ENVICANB00233AA

Written/Submitted by:	Written/Submitted by:	Reviewed/Approved by:
Charles Lucas Environmental Scientist	Julian Howard Project Manager	Gary Bagwell Principal

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ENVICANB00233AA-R01b

16 June 2010

Canberra Investment Corporation Pty Ltd
PO BOX 1000
Civic Square ACT 2608

Attention: Michael Nolan

Dear Michael

RE: Stage 3 Contamination Assessment, Jumping Creek Queanbeyan, NSW

Coffey Environments Pty. Ltd. (Coffey) is pleased to provide our Stage 3 Contamination Assessment report for the above site.

We draw your attention to the enclosed sheet entitled “Important Information about Your Coffey Environmental Report” which should be read in conjunction with the report.

We trust that this document meets with your requirements. If you require any further information regarding this document, please do not hesitate to contact the undersigned.

For and on behalf of Coffey Environments Pty Ltd

Adrian Powell
Project Manager

RECORD OF DISTRIBUTION

No. of copies	Report File Name	Report Status	Date	Prepared for:	Initials
1	ENVICANB00233AA-R01b.pdf	Final Draft	16 June 2010	Canberra Investment Corporation	MB.
1	ENVICANB00233AA-R01b.pdf	Final Draft	16 June 2010	Coffey Environments Pty Ltd	

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LIST OF ATTACHMENTS

ABBREVIATIONS

C6-C36	Hydrocarbon chainlength fraction
bgl	below ground level
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CA	Contamination Assessment
COC	Chain of Custody
COPC	Contaminants of Potential Concern
DECCW	Department of Environment, Climate Change and Water (NSW)
EIL	Ecological Investigation Level
HIL	Health Investigation Level
LOR	Limit of Reporting
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticide
OPP	Organophosphorous Pesticide
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionisation Detector
ppm	parts per million
PO	Purchase Order
QA	Quality Assurance
QC	Quality Control

ABBREVIATIONS

RPD	Relative Percent Difference
SCC	Specific Contaminant Concentration
SOP	Standard Operating Procedures
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbon
VHC	Volatile Halogenated Compound

EXECUTIVE SUMMARY

Coffey Environments Pty Ltd (Coffey) were commissioned by Canberra Investment Corporation Ltd (CIC) to conduct a Stage 3 Contamination Assessment (CA) of the proposed Jumping Creek residential estate (Lot 1 DP 711905) located at the end of Lonergan Drive, Queanbeyan, NSW. The total area of the site is approximately 109 hectares (ha). This report describes the soil, surface water and groundwater assessment undertaken at the site.

The purpose of the Stage 3 CA is to undertake supplementary contamination assessment, to inform remediation and management planning for the proposed site use. This CA has been prepared in accordance with Coffey proposal ENVICANB00233-P02, dated 13 February 2009 as a supplementary assessment to previous assessments. The proposed land use is for 'standard' residential use, including some areas for public open space.

Based on the site history provided in the previous assessment (IT, 1999) and on previous investigations (IT, 1999 and PB, 2007), the site has been used for a variety of potentially contaminating activities including:

- Mining of lead, copper, zinc and possibly gold;
- Possible minerals processing activities;
- Limestone quarry and lime kiln; and
- Pastoral activities, including one sheep dip complex.

It is believed that use of the site dates back to the 1840's when the land was first used for pastoral activities, while mining activities are believed to have occurred between the 1850's and early 1900's.

The above historical uses of the site provide a number of Areas of Environmental Concern (AECs), as described in this report. The site has been the subject of several environmental assessments which identified elevated concentrations of metals mainly associated with the mining activities.

The scope of work included the development of a Sampling Analysis and Quality Plan (SAQP) for all sampling to be carried out as part of these works. The SAQP was agreed to by the site auditor as part of this phase of works;

The site is currently used for recreational activities including trail bike riding, four wheel driving and bushwalking. Based on anecdotal evidence from the site owner, no particular land use has occurred onsite site since the 1960s.

To facilitate the assessment, the site was divided geographically into 5 generally discrete areas defined by ridges and gullies of Jumping Creek and its tributaries. Contamination sources located in any one of the discrete areas and separated by the site geography are considered to be mutually exclusive from any other area on the site, with transport of any contamination present to be down gradient into Jumping Creek and its tributaries.

Inspections carried out as part of this assessment provided observations regarding site condition and location of evidence of former land uses. The following was concluded from the observations:

- No evidence of plant stress was observed;
- No odours associated with contamination were observed;
- General wastes resulting from unauthorised disposal in small volumes were observed across the site.

EXECUTIVE SUMMARY

Following removal of weeds where practicable and further site walkovers conducted by Coffey in 2009, no further AECs were observed across the site, with the exception of a previously unidentified mine shaft at Mine Site 4. Following from this, the AEC's confirmed in this assessment were:

- Mine Site 1 (within DOI 3);
- Mine Site 3 (within DOI 1);
- Mine Site 4 (within DOI 2);
- Former Minerals Processing Area (within DOI 2);
- Former Lime Kiln (within DOI 3); and
- Former Sheep Dip (within DOI 4).
- Mine sites were generally observed to consist of a mine shaft and waste rock/soil stockpile/s. Mine Site 4 also had an adit, open cut mine area and an adjacent clay quarry.
- The mineral processing area and sheep dip area were observed to generally consist of remnant infrastructure.
- A remnant kiln constructed from Bricks was observed at the lime kiln area.

In accordance with the SAQP prepared for this project, sampling of soils was conducted across each of the Domains of Interest in order to:

1. Provide confidence that there has been no anthropogenic impact to areas outside of the identified AECs - Sampling Strategy 1; and
2. To confirm the lateral and vertical extent of contamination within the AEC areas, where potentially contaminating activities were identified – Sampling Strategy 2.

Sampling of sediments in watercourses on the site was also carried out to assess the potential for migration of contamination via erosion from the AECs via sediment movement to the watercourse.

Groundwater and surface water sampling was carried out to assess the potential for offsite migration of identified contamination, and potential health and environmental risk.

The Sheep Dip Area was not assessed as part of this investigation. Coffey understands that assessment and remediation of the Sheep Dip Area will be completed as part of the validation works to be conducted as per the Remediation Action Plan dated 29 October 2009 (reference ENVICANB00233AA-R02).

Conclusions

Following this assessment it was concluded that:

1. The primary source of elevated metals concentrations on the site is attributable to natural mineralisation within local geological formations. Based on analytical results from samples of rock fragments and samples from weathered rock at the surface, which were collected from up gradient locations of the mine sites, mining activities are considered to in general not have concentrated the contamination in the identified AEC areas. As such, the mine sites are considered to be identifiers of areas where natural mineralisation in locally higher concentrations is present within the local geology. However, disturbance of the AEC areas is evident, and so the distribution of elevated

metals concentrations cannot be concluded to be completely dissociated with historical mining activity.

2. An area of elevated metals concentrations exists within soil and rock at the Mine Site 3 area, which has been adequately delineated in this assessment. Metals concentrations exceeded the adopted HIL-A criteria for arsenic, cadmium and lead, and the EIL criteria for copper and zinc.

3. An area of elevated metals concentrations exists within soil and rock at the Mine Site 4 area, which has been adequately delineated in this assessment. Metals concentrations exceeded the adopted HIL-A criteria for cadmium, lead and zinc, and the EIL criteria for arsenic and copper.

4. Coffey considers that the Mine Site 3 and Mine Site 4 areas are unsuitable for standard residential use, due to the significantly elevated metals concentrations in soil and rock in these areas, the difficulty and cost of removing soil and rock containing elevated metals concentrations from the site, and evidence suggesting that the concentrations are due to natural mineralisation of the area. Further, capping of soils, with an appropriate management plan, is generally considered unsuitable for residential areas. Therefore, it would be prudent to avoid residential development of these areas, or alternatively conduct a site specific health risk assessment to confirm the risk for residential development of these areas.

5. Inspection of the Minerals Processing Area identified remnant infrastructure including wooden posts and concrete slab as well as 2 sumps. It is concluded that metals concentrations in the Minerals Processing Area meet the adopted HIL-A and EIL criteria on a statistical basis. However, metals concentrations exceeding the EIL (arsenic, cadmium and zinc) and HIL-A criteria (zinc only) was identified associated with 2 sump structures, and it is recommended that this contamination is removed to offsite landfill with the demolition of these structures.

6. Samples collected from within the drainage channels of Jumping Creek and its tributaries returned metal concentrations generally above the laboratory Limit of Reporting (LOR) but below the adopted EIL and HIL A criteria, the drainage channel results indicate that significant migration of contaminants via sediment transport in the watercourse has not occurred.

7. Based on the sampling and analytical results, Coffey conclude that DOI 3 and DOI 5 are suitable for the proposed development with no further assessment or remedial works required. It is noted that the Sheep Dip Area was not assessed as part of this investigation. Coffey considers that the Sheep Dip Area may be made suitable for future residential use after implementation of relevant works and validation of the sheep dip area, as described in the Sheep Dip Area RAP (reference ENVICANB00233AA-R02).

8. All other assessed areas of the site, outside of the delineated Mine Site 3 and Mine Site 4 areas, and the sumps in the Mineral processing Area, are suitable for either:

- Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or
- Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

Groundwater across the site was identified to have elevated concentrations of copper, lead and zinc. Samples collected from wells located up gradient of AECs also displayed concentrations of these metals exceeding the adopted criteria and generally within a similar range to concentrations detected in down gradient wells. An exception to this was lead detected in MW2 (down gradient of Mine Site 1), which was approximately 30 times higher than the up gradient well. Lead concentrations in both wells exceeded the adopted criteria and it is likely that the increase in lead concentrations in the down gradient well is due to the presence of natural mineralisation and not due to mining activities in the area. Coffey therefore concludes that the groundwater across the site has elevated metal concentrations exceeding the adopted criteria. Based on the soil analytical results and results from water samples collected up gradient of AECs, Coffey concludes that the elevated concentrations of metals in groundwater are likely due to natural mineralisation and not due to historical mining activities. However, impact to groundwater from the source areas on site cannot be excluded,.

Evaluation of the Conceptual Site Model suggests that risk of exposure of site users to elevated metals levels in groundwater is low, considering the depth to groundwater under the site, and the low likelihood of groundwater extraction and use on the site. However, a potentially complete exposure pathway exists to groundwater contamination for offsite users of groundwater, via groundwater extraction. Assuming that areas of contamination at the surface are contributing to groundwater metals impact, levels of these metals would be expected to dissipate due to dispersion with movement of groundwater down-gradient of the site. Therefore, risk for the most likely use down-gradient of the site (stock watering) is expected to be low with regard to relevant levels. Further, metals levels in groundwater would be unaffected by the proposed site development, given that mineralisation in the local geology is the likely dominant source of metals in groundwater.

OCPs and OPPs were not detected in soil samples nor groundwater samples collected across the site. The laboratories did not report to ANZECC guidelines for analysis of groundwater, however due to the depth of groundwater across the site, OCP and OPPs affinity to bind to soil and the time period (minimum of 50 years) since any potentially contaminating activities involving these contaminants has occurred, the risk of OCPs and/or OPPs to be present in the groundwater is considered to be low.

Coffey considers that the metals concentrations in surface water do not represent a risk to human health for the proposed site development, due to evidence suggesting that these concentrations are due to regional mineralisation, and also being well below guidelines for recreational water quality and aesthetics published in ANZECC & ARMCANZ 2000.

Generally concentrations of metals in surface water samples, and considering low concentrations in sediment samples collected from the waterways, indicate that surface water flow are not a major transport route for metals at the site.

Recommendations

The following recommendations were made from this assessment:

1. Mine Site 3 and Mine Site 4 areas are considered unsuitable for standard residential use, due to elevated metals concentrations naturally present in soil and rock in these areas. Therefore, it would be prudent to avoid residential development of these areas by revising the development plan for the site.
2. Restriction of access to the Mine Site 3 and Mine Site 4 areas in the short term to avoid unhealthy exposures to metals concentrations in these areas, as well as unsafe conditions associated with mine shafts, adits and other structures;
3. The elimination or management of physical hazards (such as mine shafts or other structures) associated with these areas. However, it is noted that the identification and management of physical hazards on the site were outside the scope of this assessment;

4. Removal and landfill disposal (or on-site management) of stockpiles of rock and soils and other loose potentially contaminated materials in the Mine Site areas; and

5. Implementation of a landscape cap and vegetation in Mine Site 3 and Mine Site 4, so that these areas may be incorporated into the development as open space areas with adequate stabilisation and barrier to direct contact with rock and soils.

It is recommended that these portions of the site are remediated under a RAP and managed under a Site Environmental Management Plan (SEMP). The RAP should include environmental management procedures to manage potential migration or exposure of contamination during remedial works. Additionally, contamination associated with the sumps identified at the Minerals Processing Area is recommended to be removed to offsite licensed landfill (or managed on-site), along with the demolition of these structures.

Coffey understand that assessment and remediation of the Sheep Dip Area will be completed as part of the validation works to be conducted as per the Remediation Action Plan dated (reference ENVICANB00233AA-R02).

1 INTRODUCTION

1.1 Background

Coffey Environments Pty Ltd (Coffey) was commissioned by Canberra Investment Corporation Ltd (CIC) to conduct a Stage 3 Contamination Assessment (CA) of the proposed Jumping Creek residential estate (Lot 1 DP 711905) located at the end of Lonegran Drive, Queanbeyan, NSW. The area of the site is approximately 109 hectares (ha). This report describes the supplementary soil, surface water and groundwater assessment undertaken at the site.

The following previous assessments conducted on the site have been reviewed for this assessment:

I IT Environmental Australia Pty Ltd, November 1999. *Stage 2 Environmental Investigation Jumping Creek Queanbeyan NSW 2620*. Report J109217-R01 (IT, 1999).

II EGIS Consulting Australia, September 2001. *Jumping Creek Site Queanbeyan NSW Summary Site Audit Report*. Report VA0420.001 (EGIS, 2001)

III Parsons Brinckerhoff Australia Pty Ltd, September 2007. *Jumping Creek Supplementary Contamination Assessment*, Report 2111525A/PR_6551 (PB, 2007)

IV NSW Archaeology Pty Ltd, 2009.*Draft Proposed Jumping Creek Rezoning Queanbeyan, NSW Aboriginal Archaeological Study.*

A Stage 1 Environmental Investigation was also conducted on the site by ADI in 1996; however this report was not available for review in this assessment.

This CA has been prepared in accordance with Coffey proposal ENVICANB00233-P02, dated 13 February 2009 as a supplementary assessment to previous assessments. The CA has been prepared for review by the contaminated land auditor in accordance with relevant guidelines made or approved by the NSW DECCW under the Contaminated Land Management Act 1997 (CLM Act), as referenced in this CA. In particular, these guidelines include, but are not limited to:

- NSW DECC (2006), Guidelines for the NSW Site Auditor Scheme (2nd edition); and
- NSW DECC (2000), Guidelines for Consultants Reporting on Contaminated Sites

Based upon information provided by CIC, it is understood that the planned future site use is for low density residential land use with areas of open space for recreational use, which may include the development of a wetlands area.

Based on the detailed site history provided in a previous assessment (IT, 1999) and on information included in previous investigations (IT, 1999 and PB, 2007), the site has been used for a variety of potentially contaminating activities including:

- Mining of lead, copper, zinc and possibly gold;
- Possible minerals processing activities;
- Limestone quarry and processing kiln; and
- Pastoral activities, including operation of one sheep dip complex.

It is believed that the first use of the site was for pastoral activities in the 1840s, while mining activities are believed to have occurred between the 1850s and early 1900s. The limestone quarry and associated kiln was believed to be operating between the 1860s and 1880 and again between 1920 and 1940 before being permanently decommissioned.

The above historical uses of the site provide a number of Areas of Environmental Concern (AECs), as described in this report. The site has been the subject of several environmental assessments which identified elevated concentrations of metals mainly associated with locations of mining activities.

The site location is shown in Figure 1. For the purposes of this assessment the site has been divided into 5 Domains of Interest (DOI) based on proposed residential development parcels, AECs and topography. A detailed site plan showing the site boundary, the DOIs, AECs and proposed residential development is shown in Figure 2. Proposed open space areas are those areas outside of the marked residential allotments shown in Figure 2.

1.2 Objectives

The purpose of this CA is to undertake supplementary contamination assessment, to inform remediation and management planning for the proposed site use. The objectives of the CA include:

- Identify potential areas of contamination that were not detected during previous investigations. Areas requiring further investigation include former Mine Sites 1, 3 and 4; the Lime Kiln Area; proposed Residential Areas; the proposed Open Space areas; Drainage Channels, the former Mineral Processing Area, groundwater, surface water and sediment within Jumping Creek and its tributaries;
- Conduct site inspections, in order to confirm the known AEC's, identify any further potentially contaminated areas or sources;
- Provide information regarding the suitability of the site for its intended uses, in accordance with the State Environmental Planning Policy 55 (SEPP 55) and Queanbeyan City Council's Development Control Plan No. 55 – *Contaminated Land Management;*
- Provide sufficient information for remediation and management planning to address any areas where the contamination status of soil, surface water, groundwater or sediment present an unacceptable risk for the proposed development;
- Provide supplementary information for qualitative risk assessment to be carried out with regard to the proposed land uses; and
- Meet the requirements of the auditor (contaminated land), in carrying out a site audit under the CLM Act;

1.3 Scope of Works

The scope of works conducted to achieve the above objectives for the site included:

- Health and Site Safety (HSS) planning, including a Site Safety Plan (SSP) for all works carried out on site;
- Development of a Sampling Analysis and Quality Plan (SAQP) for all sampling to be carried out as part of these works. The SAQP was agreed to by the site auditor as part of this phase of works;
- Consultation with the site auditor, with regards to the planned works onsite;

- 15 locations were sampled within the former Mine Site 1 area. Investigations were progressed to a maximum depth of 1.0 m bgl or until refusal;
- 2 samples were collected from a stockpile at Mine Site 1;
- 15 locations were sampled within the former Mine Site 3 area. Investigations were progressed to a maximum depth of 0.6 m bgl or until refusal. An additional 11 samples were collected in the vicinity of Mine Site 3 and submitted for laboratory analysis to further delineate metal impacts encountered in this area;
- 2 samples were collected from a stockpile at Mine Site 3;
- 30 locations were sampled within the former Mine Site 4 area. Investigations were progressed to a maximum depth of 0.6 m bgl or until refusal. An additional 11 samples were collected in the vicinity of Mine Site 3 and submitted for laboratory analysis to further delineate metal impacts encountered in this area;
- 5 samples were collected from a stockpile at Mine Site 4;
- A total of 6 samples were collected from the kiln area with 2 samples collected at each kiln location to maximum depth of 0.6 m bgl.
- 41 locations were sampled within proposed residential areas. Investigations were progressed using a hand auger to a maximum depth of 0.6 m bgl or until refusal;
- 20 locations were sampled within proposed open space areas. Investigations were progressed using a hand auger to a maximum depth of 0.2 m bgl;
- Surface samples were collected at 13 locations from within the drainage channels across the site;
- Surface water samples were collected at three locations across the site;
- 13 sediment samples were collected from within Jumping Creek and its tributaries across the site;
- 8 groundwater monitoring wells were installed across the site using a solid flight auger and a rotary percussion hammer drill. Wells were drilled to depths ranging from 17.0 m bgl and 37.2 m bgl;
- Groundwater monitoring wells were established within 24 hrs of construction and samples were collected following establishment;
- QAQC samples were collected for all soil and water samples at a rate of 1 duplicate per 10 samples and 1 triplicate per 20 samples.

Safety with regards to sampling in the vicinity of open mine shafts was addressed in our SSP, however addressing measures to make the mine shafts safe for future site works is outside of our scope of works.

2 SITE IDENTIFICATION AND DESCRIPTION

For the purposes of this assessment the site has been divided into 5 geographical sub-areas defined by the ridges and gullies of Jumping Creek and its tributaries. These areas have been described as Domains of Interest (DOI1 to DOI5).

Table 1: Site Identification

Site Address:	Closest road: Lonergan Drive, Greenleigh NSW
Coordinates:	E 704742 S 6083175
Site Area:	Approximately 109 hectares
DOI1	Approximately 9.7 hectares
DOI2	Approximately 24.5 hectares
DOI3	Approximately 32.7 hectares
DOI4	Approximately 15.8 hectares
DOI5	Approximately 26.3 hectares
Title Identification Details:	Lot 1 on DP 711905
Current and Proposed Zoning:	Current: 1 Rural A Zone
	Proposed: 2 (a) Residential A
Current Land Use:	Recreational
Proposed Land Use:	Low Density Residential and public open space
Adjoining Site Uses:	North: 1(c1) Residential “C1” Zone East: 6(a) SP Open Space A-Scenic Protection South: 1(a) Rural A South West: 7(a) Environmental Protection West: 6(b) Open Space

3 SITE CONDITION AND ENVIRONMENT

3.1 General Site Condition

The following information is summarised from previous assessment reports, as well as Coffey inspections and investigations.

Generally, the site currently presents evidence of historical land uses, including grazing and mining. Current unauthorised land uses include bushwalking, four wheel driving and motorbike riding. The site is secured by a fence at the end of Lonergan Drive however site users were observed on site during investigations, suggesting that there are other access points utilised by site users.

Observation regarding site condition and location of evidence of former land uses were made during inspections carried out between the 22 April 2009 and 8 October 2009 and during fieldwork onsite. The following general observations were made:

- No evidence of plant stress was observed;
- No odours associated with contamination were observed;
- General waste resulting from unauthorised fly tipping was observed across the site in small volumes.
- Following removal of weeds where practicable and further site walkovers conducted by Coffey in 2009, no further AECs were observed across the site, with the exception of a previously unidentified mine shaft at Mine Site 4. However, it is noted that a possible Mine Site 2 was also previously reported by IT Environmental (1999), but could not be identified by either PB (2007) or Coffey (2010), and only low concentrations of metals were reported in this area in PB (2007).
- Following from this, the following AEC's were confirmed on the site:
- Mine Site 1 (within DOI 3);
- Mine Site 3 (within DOI 1);
- Mine Site 4 (within DOI 2);
- Former Minerals Processing Area (within DOI 2);
- Former Kiln (within DOI 3); and
- Former Sheep Dip (within DOI 4).
- Mine sites were generally observed to consist of a mine shaft and waste rock/soil stockpile/s. Mine Site 4 also had an adit, open cut mine area and an adjacent clay quarry.
- The mineral processing area and sheep dip area were observed to generally consist of remnant infrastructure.
- A remnant kiln constructed from Bricks was observed at the kiln area.

3.2 Topography

The site lies within an enclosed valley within the Queanbeyan River Corridor with the Queanbeyan River to the west and high country to the east. The three dominant landforms within this valley are :

- Ridgeline running parallel to the Queanbeyan River (RL 615 metres);
- Gentle to moderate slopes east of the central flood plain (slope 10-20 percent); and
- Incised gorge and creek line (slope 33-50 percent).

The total relief of the site is approximately 115 metres rising from the Queanbeyan River (RL 575 metres) to RL 690 metres. A narrow, poorly drained floodplain exists on the western side of Jumping Creek. It is noted that the alluvial terrace steps up 1 to 2 metres in height from the stream channels.

The nearest permanent surface water feature is the Queanbeyan River which borders the western boundary of the site.

3.3 Geology

The Geology of Canberra, Queanbeyan, and Environs 1:50,000 map and previous reports (IT, 1999) and (PB, 2007) indicate:

- The site is underlain by the Pitman Formation, which is described as Ordovician sediments and includes sandstone, feldspathic sandstone, greywacke, micaceous siltstone and shale, chert and phyllite.
- Skeletal soils to a maximum depth of 0.5 m bgl overlying bedrock are generally encountered across the entire site. The soil profile across the site is generally silty sands and clayey soil with some gravel, underlain by hard sandy clay and gravelly clay, underlain by bedrock consisting of mainly highly to moderately weathered foliated tuff, siltstone or shale.
- Alluvial and slope wash deposits to a depth of up to 2 m bgl are present within the gullies of Jumping Creek and its tributaries.

A detailed description of the site geology is provided in the IT (1999) report.

3.4 Hydrology and Hydrogeology

The IT (1999) report provides a detailed description of the site hydrogeology, which is as follows:

The 1:100,000 scale map *'Hydrogeology of the Australian Capital Territory and Environs*' (1984) indicates that deep (greater than 20 metres) moderate to high yielding fractured aquifers of medium quality may occur in the eastern half of the site. In the western half of the site, deep fractured aquifers may be present with low to medium yields and variable quality. Shallow (less than 10 metres) alluvial aquifers in the Jumping Creek area are likely to be discontinuous with highly variable quality.

Jumping Creek is ephemeral and was visually dry at the time of the investigation, with the exception of small stagnant pools located in the lower reaches of the creek system. Jumping Creek meanders through the middle of the site and discharges to the Queanbeyan River at the western site boundary. The Queanbeyan River runs along the western boundary of the site and flows into Molonglo River. Various smaller inlet creeks and drainage channels intercept Jumping Creek within the site. Queanbeyan River, Jumping Creek and its tributaries are shown on Figure 2.

A search of the NSW Groundwater Works database for bore holes indicated that 14 registered groundwater bores are located within 1 km of the site boundary. All of the bores were identified to be for domestic use and no water quality parameters were recorded.

No site specific permeability assessments of the underlying shale have been made, however based on Fetter, 1980, it is known that sedimentary rock have primary permeability similar to unconsolidated material. Therefore the estimated intrinsic porosity of the Shale is estimated to be between 10^{-3} and 10^{-1} (darcys). In addition, secondary permeability can developed through fracturing which, in turn increases porosity. The general range of porosity for shale may be expected to be between 10 and 35%.

No site specific hydraulic conductivity assessments of the underlying shale have been undertaken. However, the hydraulic conductivity of the geology underlying the site would be expected to be represented by weathered sandstone to shale. Based on Freeze and Cherry (1979) hydraulic conductivity would then be expected to be in the range of approximately 8.64×10^{-2} to 8.64×10^{-5}. This may be considered to be a maximum range, considering the local geology.

3.5 Local Environmental Receptors

Based on the above review, the local environmental receptors for surface and groundwater from the Site include:

- Jumping Creek;
- Queanbeyan River/Molonglo River; and
- Local domestic bores.

4 SITE HISTORY

4.1 Historical Land Use

Previous land uses are adequately documented in IT (1999) and PB (2007). These references indicate that proposed Jumping Creek residential estate area has been previously used for a variety of land uses including:

- Mining of lead, copper, zinc and possibly gold;
- Possible minerals processing activities;
- Limestone quarry and processing kiln; and
- Pastoral activities, including one known remnant sheep dip.

It is believed that use of the site dates back to the 1840's when the site was first used for pastoral activities. Mining activities are believed to have occurred between the 1850's and early 1900's. The limestone quarry and processing was believed to be operating between the 1860's and 1880 and again between 1920 and 1940 before being permanently decommissioned.

The site has been the subject of several environmental assessments carried out by others which have identified elevated concentrations of metals mainly associated with areas where mining activities have been conducted. Assessment of the remnant sheep deep identified the minor concentrations of arsenic and organochlorine pesticides.

Uncontrolled and unauthorised dumping of general waste (fly tipping) has occurred across the site, with numerous car bodies and other minor waste piles located across the site. Fly tipping activities on the site were not concentrated in any locations across the site and were generally considered to represent minor volumes of waste not warranting investigation as part of this assessment. Recommendations for general clean up of any residual waste present across the site may be included as part of the site management plan and/or remediation action plan.

There are no known services located onsite nor was any evidence of such services observed around any remnant infrastructure.

The site is currently used for recreational activities including trail bike riding, four wheel driving and bushwalking. Based on anecdotal evidence from the site owner, no particular land use has occurred onsite site since the 1960s.

During site walkovers conducted by Coffey during the recent phase works, evidence of the known historical land uses were observed on site. No evidence of any other land uses was observed during the recent phase of works. These observations support the site histories presented in reference I (1999) and reference II (2007).

4.2 Zoning

Currently the site is zoned in the Queanbeyan City Council (2007) LEP zoning plans as 1(a) Rural "A" Zone. A review of council records (Queanbeyan, 2007) indicates that the site has not been previously zoned for any other land uses.

5 SUMMARY OF PREVIOUS ASSESSMENTS

5.1 Summary of Previous Assessments

Several environmental assessments have been undertaken on the site and were available to Coffey for review. These reports were reviewed as a part of the preparation of this assessment and findings are summarised in the following sections.

5.1.1 IT Environmental Stage 2 Environmental Investigation (1999)

IT Environmental (Australia) Pty Ltd (IT) undertook a Phase 2 environmental site assessment of the Jumping Creek site in 1999 which involved the collection of soil samples from most key locations on the site. The results of the assessment indicated the following:

- *"Minor metal and OCP impacts detected at the sheep dip and kiln sites do not represent any risk to the environment or human health.*
- *Past mining, processing and agricultural activities at the site do not appear to have created any ongoing impact to Jumping Creek.*
- *The presence of elevated arsenic and lead, and the presence of some sulphides in background soil samples are consistent with the local geological setting and historical mining around the site for copper, lead, zinc, gold and silver. Natural geological deformation of the rocks underlying the site has caused minerals in the rocks to be concentrated and subsequently targeted by early miners. The metals and sulphides detected in the background samples, and samples from the mine sites and the ore processing area, are commonly associated with mineralisation containing the base and precious metals mined at the site. All background samples were collected upslope from visible mining and processing areas.*
- *Although some of the elevated metal concentrations detected at the mine sites, ore processing area and in background samples exceed some of the site investigation criteria, the detected concentrations are considered a natural occurrence in keeping with the local geological setting. No impact to Jumping Creek was detected down gradient of these areas. Subsequently, metal concentrations in these locations are not considered a risk to the environment. Zinc concentrations are also not considered a risk to human health, as zinc concentrations did not exceed human health-based criteria. Due to a lack of soil and significant vegetation at most sampling sites, particularly the mine sites and ore processing area, exceedances of phytotoxicity criteria is not considered an issue at the site.*
- *However, isolated lead and arsenic concentrations, although natural, do exceed human health-based investigation levels for both residential and open space settings (lead at mine sites MS3 and MS4 and background location BSS6 near MS4, and arsenic concentration at mine site MS3 and background location BSS5 near MS3). These locations are in parts of the site occupied by steep and rocky slopes, and are unlikely to be developed for residential purposes. Information from the Queanbeyan City Council indicates that the future zoning of the area is 1(c1) 'C1' – Rural Development, and the potential risk to human health is considered to be minimal.*
- *Offsite disposal of metal impacted soil from mine site MS4 is not considered practical, as the only facilities in NSW that are currently permitted to receive industrial material are located in western*

Sydney, and transport costs would be significant. Management of this area by restricting access is considered a more suitable alternative"

- *Based on the findings of the assessment, IT concluded that the Jumping Creek site was suitable for the proposed land uses. This finding was dependent upon the following recommendations:*
- *"There are possible geotechnical and safety issues associated with the historical mining activities that may need consideration prior to development around mine sites. The historical value of mining, processing and kiln areas at the site may need to be considered prior to development, and may influence future use in some areas of the site.*
- *To minimise potential environmental and human health impacts, consideration should be given to restricting public access to mine sites 3 and 4, and to avoid disturbing the soil around these two sites. Restricting public access to all mine sites in the area would also help reduce potential safety hazards from open shafts and adits during and after development of the area."*

5.1.2 EGIS Consulting Summary Audit Report (2001)

Egis Consulting (Egis) prepared Summary Audit Report in 2001as a part of an independent audit of the assessment by IT. The Auditor made the following conclusions with regards to the Stage 2 Environmental Investigation conducted by IT:

- *"The investigations represent an adequate and appropriate initial assessment of the contaminant conditions at the site, but do not provide sufficient information to define the location and extent of all areas of contamination, or the requirements for management or remediation;*
- *The investigations indicate that contamination is present in some areas of the site which has potential to adversely affect the proposed use of the land and ecosystems of Jumping Creek."*

From the review of the investigation conducted by IT, the Auditor made the several recommendations for future work. The following presents a summary of the recommendations. The recommendations are summarised as follows:

- Develop a clear concept for treating contamination that will ensure the site is suitable for the proposed use and complies with regulatory requirements and is acceptable to the site owner;
- Confirm that arsenic and/or lead are the only contaminants of concern across the site;
- Consider whether concentrations of heavy metals present in the mine waste stockpiles are in a form which will not adversely affect human health or plants;
- Assess whether the mining activities and waste rock generated from these activities have the potential to generate an acid sulphate problem;
- Identify the locations where contamination may be present;
- Undertake further assessment of the possible ore processing area;
- Remove the sheep dip and validate the area;
- Ensure that Quality Assurance / Quality Control (QA/QC) sampling is done in accordance with the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) NEPC (1999) and AS4482.1; and

- Develop a remediation and management strategy for the contaminated areas.

5.1.3 Parsons Brinckerhoff Supplementary Contamination Assessment (2007)

Parsons Brinckerhoff (PB) undertook a supplementary assessment of the potential surface contamination particularly in the areas of mine site 4 and the ore processing area due to previous mining activities carried out at the site. The report also examined the various safety aspects of the past mining.

The objectives of the supplementary contamination investigation were to assess whether the mining and process areas were impacted, to further assess the nature of any shafts, adits and open cuts and comment on the land suitability and safety aspects of the proposed redevelopment. The works included detailed inspection of the mining areas following removal of some blackberries, the collection of surface samples at 23 locations across the sites, laboratory analysis of selected samples for heavy metals and selected samples for cyanide and sulphide, and reporting.

The results of the assessment in relation to contamination on the site indicated the following:

Geology

- “Underlying geology of the site is Silurian age rocks of the Colinton Volcanics and Cappanan Beds and Ordovician rocks of the Pitman Formation. The rocks comprise interbedded siltstones and limestones. Mineralisation was observed at several of the areas comprising arseno-pyrite, galena and sphalerite;
- The soils over the mineralised areas were generally skeletal and vegetation was sparse. Some spoil from the various shafts, open cut and adit were observed in the immediate proximity to the workings; and
- No seepage or impacts of acid mine drainage were observed near any of the former mining areas.

Contamination

- The main impacts observed in the mining areas were from lead and to a lesser extent zinc, cadmium and arsenic. These are naturally occurring minerals. High concentrations were detected in the mineralised samples from the spoil material surrounding the shafts or adits particularly in mine sites 3 and 4. Only low concentrations of metals were detected at the mine site 1 and 2;
- The heavy metals are widespread in surface soils in the vicinity of the workings at MSS4 and are likely to be attributable to the historic mine workings with high concentration also being detected in the surficial soils immediately down gradient from the workings. This may be due to minor spoil or erosion from the worked area;
- Arsenic, copper, lead, mercury and zinc concentrations exceeded the provisional phytotoxicity investigation levels in numerous samples;
- The heavy metals (lead, zinc and to a lesser extent arsenic and cadmium) in MSS3 and MSS4 are at concentrations greater than the “Residential with gardens and accessible soils – Column 1” criteria and sometimes also greater than the “Residential and Open Space” criteria;
- Only low concentration of metals, mercury, cyanide and sulphide were detected in the samples collected from the processing area. These low concentrations do not support the supposed use of the area for mineral processing; and

- Sustainable remediation of the mineralised areas would be through risk minimisation and management (including possible covering with topsoil and revegetation) due to the nature of the deposits and location rather than active treatment, excavation or disposal.

PB concluded that the naturally occurring mineralisation has been previously mined with visible shafts, open cuts, and adit and various small stockpiles or spoil materials. They observed that mineralisation was visible at the surface in several locations and has resulted in selected heavy metals being in excess of acceptable residential and open space criteria. PB also concluded that areas of high mineralisation were likely to be localised around the mined areas, which are unlikely to be developed (MSS1 and MSS4) for residential use due to sloping terrain, however they may present a risk to human and environmental health through transient use or erosion to Jumping Creek. PB concluded that the areas including MSS1, MSS2 and the processing area appeared to have a low risk of impact which would preclude their development for contamination reasons.

PB considered that while the areas around the past mining have been naturally impacted with heavy metals, these areas can be managed and would not preclude further development of the Jumping Creek land. The safety hazards can also be managed with minor backfilling and targeted earthworks.

5.1.4 New South Wales Archaeology Aboriginal Archaeological Assessment (2009)

New South Wales Archaeology Pty Ltd undertook an Aboriginal Archaeological Assessment of the proposed Jumping Creek development area. The Aboriginal Archaeological Assessment concluded that the proposed development site does not contain areas of Indigenous significance requiring conservation or impact mitigation and therefore there are no Aboriginal heritage constraints that would act to preclude rezoning and subdivision of the site. A recommendation was made that s90 Consent (under the *NSW National Parks and Wildlife Act 1974*) be sought from the Director General NSW DECC prior to construction.

Similarly there are no areas of non-indigenous significance that would act to preclude rezoning and subdivision of the site. A recommendation was made that if future developments will impact remnant infrastructure associated with historical mining and grazing, further archaeological assessments be carried out.

5.1.5 Integrity Assessment of Previous Investigations and Historical Information

The site histories provided in the previous assessments are considered to adequately describe the historical activities for the purposes of this assessment, and are confirmed by the findings of the New South Wales Archaeology Aboriginal Assessment. However, gaps in the site history have been identified relating to the detail of the mining related activities that occurred onsite, particularly with regard to the extent of mineral processing which may have occurred onsite.

The presence of infrastructure in the area of the mineral processing area suggests that some secondary and/or tertiary mineral processing may have occurred onsite, however evidence of a crushing facility is absent as part of the remnant infrastructure. Minor concentrations of cyanide detected in the current assessment in the Mineral Processing Area indicate that some degree of tertiary processing for extraction of precious metals may have occurred.

Based on supporting evidence of site walkovers and exercises to remove vegetation to investigate areas where potential mining activities may have occurred, the site histories presented in the previous reports are considered correlate well with the physical evidence for historical potentially contaminating activities. Therefore, Coffey considers the integrity of the historical information contained in the previous investigations to be high.

5.2 Contaminants of Potential Concern and Areas of Environmental Concern

Based on the review of previous assessments, Coffey site inspections and the known site history, the Contaminants of Potential Concern were detailed in an SAQP previously prepared for this project, and presented in Appendix A. As per the SAQP, the COPCs for the Site are shown in Figure 1 and listed in Table 2 below:

Table 2: Potential Contaminants of Concern Identified at Jumping Creek

Location	COPCs
Proposed Residential and Open Space Areas	lead, copper, zinc, arsenic, chromium, cadmium, nickel, mercury, organochlorine and organophosphorus pesticides, acid generating potential and pH
Mine Sites	lead, copper, zinc, arsenic, chromium, cadmium, nickel, mercury, sulphate, acid generating potential, pH
Sheep Dip	Potential contaminants as per residential areas, and specifically arsenic and organochlorine pesticides from sheep dip operations
Former Ore Processing Area	lead, copper, zinc, arsenic, chromium, cadmium, nickel, mercury, sulphate, acid generating potential, pH, organochlorine and organophosphorus pesticides and cyanide
Kiln	Potential contaminants as per residential areas, plus polycyclic aromatic hydrocarbons from kiln furnace wastes
Drainage Sediment Samples	lead, copper, zinc, arsenic, chromium, cadmium, nickel, mercury, organochlorine and organophosphorus pesticides
Surface Water Samples	lead, copper, zinc, arsenic, chromium, cadmium, nickel, mercury, organochlorine and organophosphorus pesticides,pH and sulphate

The analytical plan for assessing the potential distribution and concentration of COPCs is presented in Section 9 (Laboratory Analysis).

The Areas of Environmental Concern (AECs), or the primary source areas as identified by previous assessment and site history, are identified as follows:

- Mine Site 1 (within DOI 3);
- Mine Site 3 (within DOI 1);
- Mine Site 4 (within DOI 2);
- Former Minerals Processing Area (within DOI 2);

- Former Kiln (within DOI 3); and
- Former Sheep Dip (within DOI 4).

These AECs are shown within the DOI areas in Figure 2.

The former mine sites were identified as a primary source of metal contamination (predominantly arsenic, lead and zinc) to surface soils in close proximity to mine shafts, adits and waste rock stockpiles. It is inferred that the mining activities, including the excavation and storage of sub surface mineral bearing rock material, has introduced elevated concentrations of metals to the surface soils. It is considered that the metal concentrations around the mine site areas are likely to be elevated when compared to the background concentrations of metals at areas with no mining activities. Therefore, an objective of this assessment is to consider the distribution of metal concentrations in the vicinity of the mining areas and assess whether these may affect the proposed uses of the site.

6 SAMPLING ANALYSIS AND QUALITY PLAN

The SAQP was approved by the site auditor following responses to auditor comments provided in the interim advice (reference, 9014-IA2-Interim Advice 2), and is included at Appendix A. The purpose of the SAQP was to identify the Contaminants of Potential Concern (COPC) in relation to the Areas of Environmental Concern (AECs), as well as outline the step by step decision making process followed to define the data quality objectives in accordance with DECCW Guidelines.

This section provides a summary of the SAQP implemented for this assessment.

6.1 Data Quality Objectives

The following Data Quality Objectives (DQOs) have been defined for this assessment:

6.1.1 Step 1 – State the Problem

The objectives of this contamination assessment are presented in Section 1.2 of this report. These objectives have been developed in consideration of the following ‘problems’:

- The concentration and distribution of all potential COPCs in the primary source areas have not been adequately assessed, allowing for land use, remediation and management planning requirements for these areas in accordance with applicable regulatory guidelines. The identified AECs are listed as follows:

  Mine Site 1;

  Mine Site 3;

  Mine Site 4;

  Former Minerals Processing Area;

  Former Kiln; and

  Former Sheep Dip

- Based on previous assessment of the proposed residential areas outside of the above AECs, as well as information gathered during site walkover, it is considered that the potential for elevated areas of the COPCs in the proposed residential areas exceeding natural background levels is low. However, this is not known to an acceptable degree of certainty with regard to the proposed land use (residential).

- There is not sufficient information regarding elevated concentrations of COPCs in drainage channel sediments. Elevated concentrations of COPCs in drainage channel sediments may indicate continuing migration of contaminants, and/ or may provide a health and/ or environmental risk with regard to the proposed land uses;

- There is not sufficient information regarding elevated concentrations of COPCs in surface waters (Jumping Creek). Elevated concentrations of COPCs in surface waters may indicate continuing migration of contaminants, and/ or may provide a health and/ or environmental with regard to the proposed land uses; and

6.1.2 Step 2 – Identify the Decisions

The decisions that are required to be made are:

- What are the concentrations and distribution of all potential COPCs in the identified AEC areas, allowing for land use, remediation and management planning requirements for these areas in accordance with applicable regulatory guidelines, and with regard to the proposed land uses?
- To confirm the assumption that there is a low potential for elevated areas of the COPCs in the proposed residential areas (i.e. outside of the identified AEC areas), exceeding natural background levels. Should this assumption not be confirmed, these areas should also be considered as AEC, and additional assessment may be required to adequately characterise the distribution of all potential COPCs in accordance with NSW DECCW Guidelines, and with regard to the proposed land uses;
- Are elevated levels of COPCs present in drainage channel sediments which may indicate the migration of contaminants, or health and/ or environmental risk?
- Are elevated levels of COPCs present in surface waters (Jumping Creek) which may indicate the migration of contaminants, or health and/ or environmental risk?
- Is a groundwater investigation required for the site? This may be answered following adequate characterisation of soil, sediment and surface water contamination on the site, which may indicate the potential for groundwater to be impacted.

6.1.3 Step 3 – Identify Inputs to the Decision

The primary inputs to the decisions described in Step 2 are:

- Previous analytical results from IT Environmental (1999) and Parsons Brickerhoff (2007);
- Information obtained by Coffey Environments from site walkover and inspection;
- Field measurements and observations to be made by Coffey Environments field staff;
- Information regarding natural background concentrations of the identified COPC's in the area of the site;
- Analytical results of the soil samples to be collected by Coffey Environments field staff across the site;
- Investigation criteria to be used for assessment (discussed in Section 8).

6.1.4 Step 4 – Define the Study Boundaries

The boundaries of the site are shown on Figure 1. However, offsite migration will be assessed based on available data collected from within the site.

6.1.5 Step 5 – Develop a Decision Rule

The decision rule for the investigation and validation of the areas will be as follows:

- Following a QA/QC data validation, if the results of the analytical data are considered usable for the purposes of this investigation, proceed further into the following decision making steps. Otherwise, address the data or QA/QC gap prior to proceeding further. Criteria for evaluating QA/ QC data are provided in Section 10;
- For each the identified AEC areas, has sufficient data been obtained in order to fully delineate the extent of the contaminated areas for remediation and/ or management planning? Has the distribution and boundary of the contamination been identified?
- Have aesthetic issues been assessed for all areas of the site? Are there any areas of plant stress, soil discolouration, odour, or wastes and have these been recorded sufficiently for remediation and/ or management planning?
- For areas of the site outside of the identified AECs, the 95% Upper Confidence Limit (95 UCL) of the arithmetic mean and Standard Deviation (SD) of each data set will be calculated for comparison with the following:
- For the areas where no residential development is proposed, it is assumed that the area may be used for recreation open space areas. Where this is the case, Health Based Soil Investigation Levels Column E: Parks, Recreational open space and playing fields: includes secondary schools referenced in Table 5A of the National Environment Protection Measure (1999) '*Assessment of Site Contamination*' Schedule B(1) '*Guideline on the Investigation Levels for Soil and Groundwater*' will define the adopted assessment criteria.
- For areas designated for residential purposes, the Health-based Soil Investigation Levels (HILs) Column A: Standard residential land use with garden / accessible soil (includes children's day-care centres, pre-schools, primary schools), referenced in Table 5A of the National Environment Protection Measure (1999) '*Assessment of Site Contamination*' Schedule B(1) '*Guideline on the Investigation Levels for Soil and Groundwater*' will define the adopted assessment criteria.
- If the concentration in soil exceeds the designated assessment criteria for a targeted contaminant, a check will be made against the known natural background distribution of that anolyte to determine whether the concentrations are due to anthropogenic or natural processes;
- Where anthropogenic causes cannot be ruled out, then:
- If the concentration in soil exceeds the designated assessment criteria for a targeted contaminant and there could be current or future exposure to the contaminant (e.g. if the contamination may migrate offsite or there are onsite potential human or ecological receptors for the contaminant), the contamination may be considered to pose a threat to human or ecological health. Further assessment/management may be undertaken.
- If concentrations in soils exceed the designated assessment criteria for the COPCs, and there is evidence to suggest that contamination may be mobile (based on pH, leachate assessment, or other), then a decision will be made as to the potential for ground water impact, and the requirement for groundwater assessment.
- If all concentrations of soil samples collected are below the investigation levels and comparable with background concentrations, then no further assessment/management will be required with respect to that contaminant.

6.1.6 Step 6 – Specify Limits on Decision Errors

There are two types of decision errors:

- Sampling errors, which occur when the samples collected are not representative of the conditions within the investigation area; and
- Measurement errors, which occur during sample collection, handling, preparation, analysis and data reduction.

These errors may lead the decision maker to make the following errors:

- Deciding that the soil and/or surface water is impacted when it is actually not; and
- Deciding that the soil and/or surface water is not impacted when it actually is.

An assessment will be made as to the likelihood of a decision error being made based on the results of a QA/QC assessment and the closeness of the data to validation criteria. Additionally, statistical methods may be utilised, where applicable.

6.1.7 Step 7 – Optimise the Design for Obtaining Data

Based on the previous steps 1 to 6 of the DQO process, the field and laboratory programs proposed are presented in the following sections.

6.2 Proposed Sampling Approach

From consideration of the site history, potential contamination is focussed within areas of historical activities such as the former mine sites, sheep dip and minerals processing facility. Based on the results of the previous assessments, it is evident that concentrations of COPCs exceed the guidelines that were adopted for the previous studies. However, vertical and lateral delineation of contamination was not achieved. Further to this, the results of background samples collected by IT returned concentrations of COPCs well below the adopted threshold criteria.

Therefore, it is anticipated that the majority of the site contains COPCs below the adopted criteria and that the areas of concern are restricted to the sites of historical mining, processing and livestock uses. As such two sampling strategies are proposed for this assessment:

6.2.1 Sample Strategy 1

Sampling strategy 1 intends to be a confirmatory sampling program which targets the residential areas which do not have any obvious indications of previous activities. These areas generally consist of ridges and slopes with thin skeletal soils and weathered rock exposures and previous sampling of these areas indicated that COPCs were well below the adopted threshold criteria. As such, a broad sample spacing is proposed to increase confidence in the natural background concentration of COPCs at locations unlikely to have been influenced by previous activities.

Sediment samples from within drainage channels were also proposed to determine the potential for migration of contamination via erosion from the AECs via sediment movement to the watercourse.

6.2.2 Sample Strategy 2

Sampling strategy 2 is proposed for the areas of environmental concern where potentially contaminating activities were identified. These areas may contain rock stockpiles or thicker alluvial sediments in creeks or drainage channels. The sample spacing and number of proposed samples is increased in these areas to increase the confidence in potential contaminant concentrations and to determine distribution both laterally and vertically.

The rationale for location of samples in these areas was both targeted, for identified wastes and disturbed soils, and systematic, to increase the grid density in these areas and provide lateral delineation.

The AECs targeted with this strategy included all of the AECs identified and discussed by this report, except for the remnant sheep dip area. Some minor metals and OCP impacts were previously recorded at the sheep dip, which were below relevant health-based investigation criteria (residential use). Therefore, it is considered to be more effective to conduct validation sampling of this area following removal of sheep dip structures and potentially contaminated associated soils. Remediation and validation works to be carried out in this area are described in the Coffey Remediation Action Plan dated 15th December 2009 (reference ENVICANB00233AA-R02).

6.2.3 Surface and Groundwater Sampling

Surface water sampling is proposed to assess the potential impact of contamination on site surface water. However, during the sampling program the region experienced a prolonged drought and the presence of surface water was limited. Surface water was collected from 3 locations where standing water was present within Jumping Creek, which were all downgradient of the identified AECs.

Groundwater assessment was carried out from bores installed to target the identified AECs, being either within or hydraulically downgradient of these areas. However, some locations were inhibited by access limitations.

The implementation of the sampling strategy is discussed in Section 7.

6.2.4 Domains of Interest

The site is divided geographically into 5 generally discrete areas defined by ridges and gullies of Jumping Creek and its tributaries. Contamination sources located in any one of the discrete areas and separated by the site geography are considered to be mutually exclusive from any other area on the site, with transport of any contamination present to be down gradient into Jumping Creek and its tributaries. Thus, it is not considered likely that contamination located in one geographical area could traverse gullies to impact other areas on the site. Therefore, for the purposes of developing the field and analytical plan and for assessing contamination across the site, the site has been divided into 5 Domains of Interest (DOI1 to DOI5) based on the 5 geographical areas. A Site Layout Plan showing the DOIs is presented in Figure 2.

6.3 Field and Laboratory QA/QC

The field and laboratory QA/ QC Plan implemented for this assessment is provided in the SAQP (Appendix A). The assessment of the QA/ QC with regard to the achievement of the DQOs defined for the assessment is provided in Section 10.

7 FIELD INVESTIGATION AND SAMPLING METHODOLOGY

7.1 Field Investigation Overview

Fieldwork for the soil, sediment, surface water and groundwater assessment was undertaken by a Coffey environmental scientist between 23 July and 25 November 2009, and in April 2010.

Soil, surface water and groundwater sampling was carried out in general accordance with the procedures outlined in Coffey's Standard Operating Procedures (SOPs), which are based on industry accepted protocols for environmental sampling and are consistent with the National Environment Protection Measure (NEPM) '*Guideline on Data Collection, Sample Design and Reporting*'. The protocols specify sampling procedures, number and type of samples per sample location, sample preservation methods, approved holding times, sample identification codes, QA/QC sample requirements and Chain of Custody (COC) procedures.

Hand augers and other sampling equipment were washed between each borehole using a phosphate free detergent (Decon 90) and rinsed with potable water prior to a final rinse using deionised water to reduce the potential for cross contamination between sampling locations. A new pair of disposable nitrile gloves was used in the collection of each sample. The soil samples were placed into clean 250ml glass jars with Teflon caps and placed directly into an iced insulated container for transportation to the analytical laboratory under standard Coffey COC conditions. The COC forms are presented in Appendix B.

The sampling locations for residential and open space areas, groundwater well locations, as well as with previous sample locations (IT, 1999), are shown in Figure 3. Sample locations for AECs are shown in Figures 4 to 7.

The sub-surface conditions encountered in the boreholes were logged by a Coffey Environmental Scientist and the logs are presented in Appendix C. Groundwater well construction logs are also presented in Appendix C.

Photographs of site features taken during the field works are presented in Appendix D.

A summary of the site activities undertaken at each area of investigation is presented below.

7.2 Sample Strategy 1

7.2.1 Residential Areas

Samples were collected at 41 sample locations (RE01 – RE41) across the residential investigation area, defined as the areas outside of the delineated AECs where residential allotments are proposed. The samples were collected between 23 July 2009 and 28 July 2009. Surface samples were collected from a depth range of 0.0-0.2 m bgl at each location and subsurface samples were collected from a depth range of 0.5-0.6 m bgl at 18 locations. Sample locations were located on a systematic grid basis, supplementing the previous sampling locations. Additional sampling was undertaken at RE34 and OS20, to investigate elevated arsenic concentrations at these locations.

Soil samples were collected from boreholes drilled using a hand auger to an approximate depth of 0.5-0.6 m bgl unless refusal was encountered (refusal was considered to have occurred when the hand auger could no longer penetrate the subsurface material).

Residential sample locations are presented in Figure 3.

7.2.2 Open Space Areas

Surface and subsurface samples were collected at 20 sample locations (OS01 – OS20) across the Open Space investigation area. The samples were collected between 23 July 2009 and 28 July 2009. Additional sampling was undertaken at OS20 (OS20-a to OS20-d) in April 2010, to investigate marginally elevated arsenic at this location. Surface samples were collected from a depth range of 0.0-0.2 m bgl at each location. Sample locations were located on a systematic grid basis, supplementing previous sample locations.

Open Space sample locations are presented in Figure 3.

Soil samples were collected from boreholes drilled using a hand auger to an approximate depth of 0.2 m bgl unless refusal was encountered.

7.2.3 Drainage Channel Sediment Samples

Sediment samples from within drainage channels were collected and analysed to determine the potential for migration of contamination via erosion from the AECs sediment movement to the watercourse.

Surface sediment samples were collected at 13 sample locations (DC1 – DC10, DC12 to DC14) across the Drainage Channel areas. Samples were collected on 7 and 10 August 2009 using a stainless steel hand trowel from the surface at 0.0m – 0.2 m bgl at each location. All drainage channel sample locations were downgradient of the AECs. Further sampling was conducted in the region of DC12, downgradient of DC13, to investigate elevated arsenic concentration in this region.

The drainage channel sampling locations are presented on Figure 3

7.3 Sample Strategy 2

7.3.1 Mine Site 1

Surface and subsurface samples were collected at 16 sample locations (MS1-1 to MS1-16) across the Mine Site 1 investigation area. Sample locations were generally located on a targeted basis where disturbed soils were identified, in order to provide delineation of contamination.

Samples were collected on 30 July 2009 from a depth range of 0.0-0.2 m bgl at each location. Subsurface samples were collected from a depth range of 0.5-0.6 m bgl. Samples were also collected at 0.9-1.0 m bgl at MS1-11 and at 1.4-1.5 m bgl at MS1-7.

Four stockpiles of material were located adjacent to the Mine Site 1 investigation area. Each stockpile had an estimated volume of approximately 5m^3. One sample was collected from each stockpile on 13 August 2009. The samples (MS1SP1 – MS1SP4) were collected using a stainless steel hand trowel from the surface at 0.0m – 0.2 m bgl at each location.

The Mine Site 1 Area, stockpiles and sampling locations are presented on Figure 4.

7.3.2 Former Kiln Site

Surface and subsurface samples were collected at 3 sample locations (K1 – K3) across the Former Kiln Site investigation area. Samples were collected on 28 July 2009 from boreholes drilled using a hand auger from a depth range of 0.0-0.2 m bgl to 0.9-1.0 m bgl at each location.

The Former Kiln Area and sampling locations are presented on Figure 4.

7.3.3 Mine Site 3

Surface and subsurface samples were collected at 15 sample locations (MS3-1 – MS3-15) across the Mine Site 3 investigation area. The samples were collected on 28 July 2009. Samples were located on an approximate grid basis to provide delineation of contamination. Surface samples were collected from a depth range of 0.0-0.2 m bgl at each location and subsurface samples were collected from a depth range of 0.5-0.6 m bgl at 3 locations.

Three stockpiles of material were located adjacent to the Mine Site 3 investigation area. Each stockpile had an estimated volume of approximately $5m^3$. One sample was collected from each stockpile on 13 August 2009. The samples (MS3SP1 – MS3SP3) were collected using a stainless steel hand trowel from the surface at 0.0m – 0.2 m bgl at each location.

A second round of sampling was conducted in the vicinity of Mine Site 3 on 25 November 2009, to provide delineation to locations which had returned elevated results in the previous sampling round. This included the collection of 20 surface samples at locations MS3-16 to MS3-35.

The Mine Site 3 Area, stockpiles and sampling locations are presented on Figure 5.

7.3.4 Mine Site 4

Surface and subsurface samples were collected at 40 sample locations (MS4-1 – MS4-39 and MS4-26A) across the Mine Site 4 investigation area. Samples were located on a general grid basis to provide delineation of contamination. The samples were collected on 6 and 7 August 2009. Surface samples were collected from a depth range of 0.0-0.2 m bgl at each location and subsurface samples were collected from a depth range of 0.5-0.6 m bgl at 16 locations.

Ten stockpiles of material located adjacent to the Mine Site 4 investigation area. Each stockpile had estimated volumes ranging from $5m^3$ to $10m^3$ were sampled on 13 August 2009. The samples (MS4SP1 – MS4SP10) were collected using a stainless steel hand trowel from the surface at 0.0m – 0.2 m bgl at each location.

A second round of sampling was conducted in the vicinity of Mine Site 4 on 25 November 2009, to provide delineation adjacent to locations which had returned elevated results in the previous sampling round. . This included the collection of 12 surface samples at locations (MS4-40 to MS4-51).

The Mine Site 4 Area, stockpiles and sampling locations are presented on Figure 6.

7.3.5 Mineral Processing Area

Surface and subsurface samples were collected at 16 sample locations (MP1 – MP16) across the Mineral Processing Area, on a generally targeted basis. The samples were collected on 4 and 5 August 2009. Surface samples were collected from a depth range of 0.0-0.2 m bgl at each location and subsurface samples were collected from a depth range of 0.5-0.6 m bgl. Two samples (MPSUMP-1 and

MPSUMP-2) were collected in the vicinity of a sump associated with remnant mineral processing infrastructure.

Sampling locations within the Mineral Processing Area are presented in Figure 7.

7.3.6 Sheep Dip

As discussed in Section 6, no sampling was carried out for the remnant sheep dip area as part of this assessment. Validation of this area is to be reported separately following removal of sheep dip structures and remediation of associated potentially contaminated soils, as described in the RAP prepared for this area (Coffey, 2009).

7.3.7 Surface Water

Surface water samples were collected on the 13 August 2009 from 3 locations within the Jumping Creek watercourse. Surface water sampling locations are presented on Figure 8. All surface water samples were collected at locations generally down gradient of the AECs. However, due to dry conditions, samples were taken of standing water.

7.3.8 Groundwater

Monitoring Well Installation

The installation of eight monitoring wells (identified as MW1 – MW8) was undertaken between 28 September to 1 October 2009 using a truck mounted rig fitted with solid flight augers to a depth of between 0.8 m bgl and 1 m bgl at which depth a rotary percussion hammer was then required. The Hydrapower truck mounted drill rig was supplied by Terratest Drilling. The drilling and installation was undertaken in the full time presence of an environmental scientist from the Canberra Office.

Monitoring well locations were chosen to be upgradient, down gradient, or within, selected AEC areas, subject to access limitations. Locations were also agreed with the auditor prior to the drilling program via email, dated 23 September 2009.

The depths of the wells ranged from 17 m bgl (MW7) to 37.2 m bgl (MW1). The wells were constructed using 50mm diameter Class 18 PVC machine slotted screen and casing, washed sand annulus to 0.5m above the top of the screen, a 0.5m bentonite seal and backfilled to the surface with soil cuttings derived from the drilling. At the base of each casing string was a 6m length of machine slotted screen with slot width of 0.5mm. The remainder of the casing screen comprised unslotted well casing. Borehole and well construction logs are provided in Appendix C.

4D Surveying Pty Ltd surveyed the eight monitoring wells on 22 October 2009. Elevations of the top of the well casing (TOC) and adjacent surrounding ground level were recorded relative to Australian Height Datum (AHD). 4D well survey plan is provided in Appendix E.

Groundwater monitoring locations are presented on Figure 8.

Well Development

The eight wells installed by Coffey Environments as part of this assessment (MW1 - MW8) were developed following installation. Development of wells was conducted between 28 September and 1 October 2009 by an environmental scientist using a hand bailer to remove water from the wells until the water quality parameters readings became consistent (within +/- 10% between three consecutive readings).

Groundwater Sampling

The eight monitoring wells on the site were purged and sampled on 8 October 2009 by a Coffey Environmental Scientist. Sampling of the groundwater was undertaken in general accordance with the procedures outlined in Coffey Environments Standard Operating Procedures (SOPs).

During purging of wells field parameters were taken using a calibrated water quality meter. Field readings indicated that groundwater across the site was generally fresh and neutral to slightly alkaline. Prior to sampling, an interface probe (IP) was used to assess if phase separated hydrocarbons (PSH) was present within the well and to measure the static water level. Each well was purged prior to sampling by removing water from the well until the water quality parameters readings became consistent (within +/- 10% between three consecutive readings). A new bailer was used to purge and sample each well. The water quality parameters measured using the water quality meter included pH, electrical conductivity (EC), redox potential (Eh), dissolved oxygen (DO) and temperature (^{o}C). A summary of the well purging data is presented in Appendix F.

Upon completion of the purging activities a representative groundwater sample was collected from each well and transferred into clean laboratory prepared containers with an appropriate preservative for the sample, and then placed directly into an ice filled insulated container for transportation to the analytical laboratories under COC conditions. Samples to be submitted for analysis of metals were field filtered prior to being transferred into a laboratory prepared container.

8 REGULATORY BACKGROUND AND APPLICABLE GUIDELINES

8.1 Soil Assessment Criteria

The site is proposed to be developed for low density residential allotments with open space areas which may be utilized as recreation areas and/or wetlands. In accordance with this land use objective, the soil assessment criteria adopted for this investigation are those referenced by the National Environment Protection (Assessment of Site Contamination) Measure (1999) '*Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater'* (NEPM), in particular:

- Health-based Soil Investigation Levels (HILs) - Column A (HIL-A): Standard residential land use with garden / accessible soil (includes children's day-care centres, pre-schools, primary schools), referenced in Table 5A of the National Environment Protection Measure (1999) '*Assessment of Site Contamination*' Schedule B(1) '*Guideline on the Investigation Levels for Soil and Groundwater*'; and

- Ecological Investigation Levels (EILs) referenced in Table 5A (interim urban) of the National Environment Protection Measure (1999) '*Assessment of Site Contamination*' Schedule B(1) '*Guideline on the Investigation Levels for Soil and Groundwater*'.

The above HILs are also referenced by the NSW DECC (2006) Guidelines for the NSW Site Auditor Scheme (2nd Edition): Appendix II – Soil investigation levels for urban development sites in NSW. The above EIL's for the COPC's are also identical to the 'provisional phytotoxicity-based investigation levels' from NSW DECC (2006).

It is noted that the SAQP for this project also listed the Health Based Soil Investigation Levels - Column E (HIL-E) from the NEPM, which are applicable to parks, recreational open space and playing fields, including secondary schools. These have not been applied as assessment criteria in this report, as all data have been assessed against the HIL-A criteria, which is lower than the HIL-E criteria for all analytes. This is consistent with NSW DECC (2006), which requires that soils are to be assessed against the lower of the appropriate health based investigation levels.

Due to known mineralization of some heavy metals in the surface and subsurface geology across the site, the above criteria for heavy metals will need to be applied with regard to known or measured background concentrations across the site.

Should TPH or BTEX analyses be required, the proposed soil assessment criteria would be based upon Table 3 of the NSW EPA (1994) '*Guidelines for Assessing Service Station Sites*' for sensitive (residential) land use. However, TPH and BTEX have not been identified as COPCs for the site.

Based on the above guidelines, the soil assessment criteria applied for this assessment are presented in Table 3 below, as well as along with the laboratory results in Tables LR1 to LR6.

8.2 Surface and Groundwater Assessment Criteria

The groundwater investigation levels were established based on the following NSW DECC made and approved guidelines:

- ANZECC & ARMCANZ 2000, *Australian and New Zealand guidelines for fresh and marine water quality*, National Water Quality Management Strategy, Paper No. 4, Commonwealth of Australia;

- NSW DECC 2007, *Guidelines for the Assessment and Management of Groundwater Contamination.*

- NEPC 1999a, National Environment Protection (Assessment of Site Contamination) Measure 1999, '*Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater'* and
- NEPC 1999b, National Environment Protection (Assessment of Site Contamination) Measure 1999, '*Schedule B(6) Guideline on Risk Based Assessment of Groundwater Contamination'.*

Jumping Creek, which is located within the site boundary while the Queanbeyan River is located adjacent to the western boundary of the proposed Jumping Creek residential estate. Jumping Creek is also supplied by a number of smaller ephemeral creeks and tributaries within the boundary of the estate. All of these are fresh water systems that may be recharged by site groundwater, and which may have existing and well developed aquatic ecosystems. As a result, 'common' criteria are considered for both surface waters and groundwater at the site.

ANZECC & ARMCANZ 2000 refer to the identification of the relevant 'environmental values' for a water body, so that the level of environmental quality or water quality necessary to maintain each environmental value can be determined. 'Environmental values' are defined by ANZECC & ARMCANZ 2000 as:

> 'particular uses of the environment that are important for a healthy ecosystem or for public benefit, welfare, safety or health which require protection from the effects of pollution, waste discharges and deposits.'

ANZECC & ARMCANZ 2000, NEPC 1999b and NSW DECC 2007 present sets of similar environmental values. Further, NSW DECC 2007 defines the following 'default' environmental values:

- Drinking water; and
- Aquatic ecosystems.

NSW DECC 2007 identifies three steps in determining whether drinking water supply is a relevant environmental value at a site:

- Checking whether the site is located above one of the major aquifers of drinking water quality, as listed by the NSW Department of Environment, Climate Change and Water (DECCW);
- Identifying actual groundwater users in the vicinity of the site; and
- Referring to Total Dissolved Solids (TDS) as an indicator parameter.

The Jumping Creek residential estate is not located above any of the major aquifers of drinking water quality listed by the DECCW. Of the 14 registered bores located within 1km of the site, none were identified as being used for potable water supply, although it is possible that they may be used for stock watering or recreational water use. It is also considered unlikely that any of the surface water systems are used for potable water supply. Therefore, while TDS values are unavailable for the aquifer at this stage, drinking water is not considered a relevant environmental value for the site.

It is considered that recreational water use may be an applicable environmental value for the site. In particular, this considers that one the options available for development on the site is for a wetlands area in the vicinity of Jumping Creek. This would also encourage the development of both aquatic flora and fauna, also requiring protection from potential contaminants migrating into the water system. However, guidelines applicable to protection of aquatic ecosystems are considered to be protective of this environmental value, with respect to the contaminants of concern evaluated in this assessment.

Therefore based on the above analysis, for the purposes of this investigation surface waters and groundwater at the site has been assessed against the following criteria:

- ANZECC & ARMCANZ (2000) Australia and New Zealand Guidelines for Fresh and Marine Water Quality. Protection of aquatic ecosystems. Fresh water trigger values for protection of 95% of species.

It is considered that the fresh water trigger values are applicable for investigating chemical concentrations in water at the investigation area.

It is understood that the DECC policy is that the trigger values for the protection of 95% of aquatic ecosystems should be used except where contaminants are potentially bioaccumulative in which case the trigger values for protection of 99% of species should be used. Therefore, we have selected trigger values for protection of 95% of fresh water species for the majority of contaminants, and 99% of fresh water species for bioaccumulative contaminants for initial comparison purposes, where applicable.

ANZECC (2000) states that there is currently insufficient data to derive high reliability trigger values for various heavy metal contaminants. For these contaminants, low reliability trigger values have been adopted.

While the SAQP proposed assessment criteria for TPH and BTEX, these are not considered further here as TPH and BTEX have not been confirmed as a COPC for surface or groundwater.

Due to the absence of a guideline for the protection of aquatic ecosystems for sulfate, the ANZECC & ARMCANZ guideline for recreational water quality of 400 mg/L has been adopted for this parameter.

The assessment criteria adopted for COPCs in surface and groundwater are presented in Table 3.

Table 3: Adopted Soil and Water Criteria.

Analyte		Adopted Soil Assessment Criteria			Water Criteria[4]
		HIL A	NSW EPA (1994)	EIL	
		mg/kg	mg/kg	mg/kg	µg/L
Metals					
	Arsenic	100		20	13[1]
	Cadmium	20		3	0.2
	Chromium	12%		400	1.0[2]
	Copper	1000		100	1.4
	Lead	300		600	3.4
	Mercury	15		1	0.6
	Nickel	600		60	11
	Zinc	7000		200	8.0[3]
Inorganic	Cyanide	500			7
	Sulfate				400,000[5]
PAH	Benzo(a)pyrene	1	1		200
	Total PAH	20	20		0.2
OCP	Aldrin				3
	Dieldrin				
	Aldrin + Dieldrin	10			
	Chlordane	50			
	DDT + DDD + DDE	200			
	Heptachlor	10			

Notes to Table:
1. Value for As(V) adopted, as conservatively protective of As(III) and As(V) states
2. Value for Cr(VI) adopted, as conservatively protective of total Cr (III and VI) and Cr(VI) states
3. Conservative value applied, assuming low hardness of water.
4. ANZECC & BARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality
5. ANZECC 1992: Guideline for Recreational Water Quality

8.3 Waste Classification

Soils required to be disposed to licensed landfill are required to be characterised in accordance with the NSW DECC (2008) *Classification Guidelines Part 1: Classifying Waste.* NSW DECC (2008) requires that wastes be classified in a step wise manner as outlined below.

It is noted that under NSW DECC (2008), the steps for waste classification below must be applied in the order stated below. Once a waste classification has been established under a particular step, the next step must not be continued. However classification using Specific Contaminant Concentration (SCC) may also be applicable, as defined in Step 5.

Step 1 – Is it special waste?

Step 2 – Is it liquid waste?

Step 3 – Is waste pre-classified?

- Hazardous waste

- Restricted Solid Waste
- General Solid Waste (Putrescible)
- General Solid Waste (Non-Putrescible)

Step 4 – Does waste possess hazardous characteristics?

Step 5 – Waste Classification if waste not classified in steps 1-4.

A – Classification using specific contaminant concentration (SCC) only.

Material requiring disposal is classified by comparing analytical results from the material to threshold criteria provided in NSW DECC (2008). NSW DECC (2008) provides threshold concentrations for two different waste categories, namely general solid waste and restricted solid waste. The wastes which fail to meet the criteria for restricted solid waste classify as hazardous waste. Based on the SCC alone (without leachability testing), the test value for each contaminant must be less than or equal to the contaminant threshold (CT) specified for that contaminant in Table 1 of NSW DECC (2008). These threshold concentrations are significantly higher than would apply when leachability testing is undertaken.

- General Solid Waste≤ CT1
- Restricted Solid Waste ≤ CT2

Where CT2 is exceeded, a TCLP test will be necessary to determine leachable concentrations and class of waste.

B – Classifying using both the SCC test and TCLP (Toxicity Characteristic Leaching Procedure).

For those wastes that are not classified into a waste category, NSW DECC (2008) provides threshold values for total concentrations and leachable concentrations based on TCLP test. These threshold levels are given for about 50 contaminants and groups of contaminants. For a waste to be classified under a given category, both total and leachable concentrations of the waste should meet the respective threshold concentrations.

- General Solid Waste≤ CT1 and ≤ TCLP1
- Restricted Solid Waste ≤ CT2 and ≤ TCLP2
- Hazardous Waste> CT2 or >TCLP2

Step 6 – Is the waste putrescible or non-putrescible?

9 LABORATORY ANALYSIS

Samples collected across the Jumping Creek Site were submitted for analysis at a NATA accredited laboratories. Primary and duplicate samples were sent to SGS Pty Ltd (SGS), triplicate samples were sent to MGT Environmental Consulting Pty Ltd (MGT). Laboratory certificates and COCs are presented in Appendix B. The analytical program is presented below in terms of the Domain of Interest (DOI) areas, and was developed in accordance with the SAQP and consideration of the COPCs and AECs. The implemented analytical program is presented as follows:

9.1 9.1Domain of Interest 1 (DOI 1)

Residential Area

- 10 surface samples from locations RE34 (including RE34-a to RE34-d) to RE40 were collected from within the proposed residential development area and submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 1 surface sample collected from location RE39 was also submitted for OCP and OPP analysis.
- 1 surface sample collected from location RE34 was submitted for TCLP analysis for arsenic to assess the leach ability of this material under oxidising conditions.

Mine Site 3

- A total of 26 surface samples collected from locations MS3-1 to MS3-16, MS3-18, MS3-21, MS3-23, MS3-25, MS3-27, MS3-28, MS3-30, MS3-32, MS3-34 and MS3-35 were submitted for metals(arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis;
- A total of 5 sub surface samples were collected from locations MS3-3, MS3-13 and MS3-15, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis;
- 1 surface sample collected from location MS3-8 was submitted for TCLP analysis for arsenic, cadmium and lead to assess the potential leachability of metal impacted materials within Mine Site 3 under oxidising conditions.

Mine Site 3 Stockpile

- 2 samples (MS3SP1, MS3SP3) collected from a stockpile of mine cuttings were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 3 samples (MS3SP1 to MS3SP3) collected from the above stockpile were submitted for Net Acid Generation Potential (NAGP) and Net Acid Generation (NAG) analysis.

9.2 9.2Domain of Interest 2 (DOI 2)

Residential Area

- 6 surface samples collected from locations RE24 and RE30 to RE35, from within the proposed residential development area, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 3 surface samples collected from locations RE24, RE30 and RE35 were submitted for OCP and OPP analysis.

Open Space Area

- 12 surface samples collected from locations OS13 to OS20 (including OS20-a to OS20-d) from within areas proposed to be developed for open space and/or recreational use, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 3 surface samples collected from locations OS15, OS16 and OS19 were submitted for OCP and OPP analysis.

Mine Site 4

- A total of 45 surface samples collected from locations MS4-1 to MS4-39, MS4-26A, MS4-41, MS4-43, MS4-45, MS4-47, MS4-49 and MS4-51, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis;
- A total of 16 subsurface samples collected from locations MS4-1 to MS4-6, MS4-12 to MS4-13, MS4-18, MS4-24, MS4-25, MS4-26A, MS4-30, MS4-33 and MS4-34, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.

Mine Site 4 Stockpile

- 5 samples (MS4SP1, MS4SP3, MS4SP5, MS4SP7, and MS4SP9) collected from a stockpile of mine cuttings were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 10 samples (MS4SP1 to MS4SP10) collected from the above stockpile were submitted for Net Acid Generation Potential (NAGP) and Net Acid Generation (NAG) analysis.

Mineral Processing Area

- A total of 32 samples were collected from 16 locations (MP1 to MP16) and comprised a surface sample and subsurface sample at each location. Samples were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 8 surface samples collected from locations MP1, MP2, MP4, MP9 to MP11, MP13 and MP14 were submitted for OCP, OPP and cyanide analysis.
- 2 samples (MPSUMP-1 and MPSUMP-2) were collected from sumps located within the Minerals Processing Area and submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), OCPs and OPPs, and cyanide analysis

9.3 9.3Domain of Interest 3 (DOI 3)

Residential Area

- 15 surface samples collected from locations RE02, RE05, RE06, RE10, RE13 to RE15, RE19, RE20, RE22, RE25, RE26, RE28, RE29 and RE41 and 5 subsurface samples collected from locations RE14, RE19, RE20, RE26 and RE28 from within the proposed residential development area and were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.

- 7 surface samples collected from locations RE02, RE10, RE15, RE20, RE25, RE28 and RE41 were also analysed for OCP and OPP.

Open Space Area

- 4 surface samples collected from locations OS05, OS07, OS08 and OS10, from within areas proposed to be developed for open space and/or recreational use, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 2 samples from locations OS05 and OS10 were also analysed for OCPs and OPPs.

Mine Site 1

- A total of 35 samples were collected from 16 locations MS1-1 to MS1-16 and comprised a surface sample and subsurface sample at each location. 2 Deeper samples were collected at location MS1-7 (0.9-1.0 m and 1.4-1.5 m) and 1 deeper sample was collected at location MS1-11 (0.9-1.0 m). Samples were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.

Mine Site 1 Stockpile

- 2 samples (MS1SP1 and MS1SP3) collected from a stockpile of mine cuttings were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 4 samples (MS1SP1 to MS1SP4) collected from the above stockpile were submitted for Net Acid Generation Potential (NAGP) and Net Acid Generation (NAG) analysis.

Kiln Area

- A total of 6 samples were collected from 3 locations K1 to K3 and comprised a surface sample and subsurface sample at each location. All samples were submitted for PAH analysis.

9.4 9.4Domain of Interest 4 (DOI 4)

Residential Area

- 5 surface samples were collected from locations RE01, RE03, RE04, RE09 and RE12 from within the proposed residential development area. All samples were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 1 sample collected at location RE12 was also submitted for analysis of OCPs and OPPs.

Open Space Area

- 4 surface samples collected from locations OS02 to OS04 and OS06, from within areas proposed to be developed for open space and/or recreational use, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 1 sample from location OS06 was also analysed for OCPs and OPPs.

9.5 9.5Domain of Interest 5 (DOI 5)

Residential Area

- 9 surface samples were collected from locations RE07, RE08, RE11, RE16 to RE18, RE21, RE23 and RE27 from within the proposed residential development area. All samples were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 3 samples collected at locations RE16, RE17 and RE27 was also submitted for analysis of OCPs and OPPs.

Open Space Area

- 4 surface samples collected from locations OS01, OS09, OS11 and OS12, from within areas proposed to be developed for open space and/or recreational use, were submitted for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) analysis.
- 1 sample from location OS01 was also analysed for OCPs and OPPs.

9.6 9.6Drainage Channels

- 17 surface samples (DC1 to DC10, DC12 to DC14 and DC12-a to DC12-d) were collected from within the drainage channels separating the 5 Domains of Interest. All samples were submitted for laboratory analysis of metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), OCPs and OPPs.

9.7 9.7Surface Water and Ground Water

The 8 primary groundwater samples and the field QC samples collected were analysed for the following potential contaminants of concern:

- 8 priority metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
- pH;
- Sulphate; and
- Organochlorine pesticides (OCPs).
    - The 3 surface water samples and the field QC were analysed for the following potential contaminants of concern:
- 8 priority metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
- Sulphate; and
- Organochlorine pesticides (OCPs).

9.8 9.8Toxicity Characteristic Leaching Procedure (TCLP) Analysis

TCLP analysis was conducted to provide an indication of waste classification for materials that may require offsite disposal for remediation of the site. TCLP analysis was conducted on 2 samples (MS3-8_0.0-0.2 and RE34_0.0-0.2) from DOI 1 and 5 samples (MS4SP1, MS4SP9, MS4-26A_0.5-0.6, MS4-27_0.0-0.2 and MP15_0.0-0.2) collected from DOI 2 to assess the leaching potential of contaminants detected in previous analysis at concentrations exceeding the adopted HIL A criteria. A summary of the TCLP analysis is as follows:

DOI 1

- 1 sample (MS3-8_0.0-0.2) was submitted for TCLP analysis for arsenic, cadmium and lead;
- 1 sample (RE34_0.0-0.2) was submitted for TCLP analysis for arsenic.

DOI 2

- 3 samples (MS4-27_0.0-0.2, MS4SP9 and MP15_0.0-0.2) were submitted for TCLP analysis for lead;
- 2 samples (MS4-26A_0.5-0.6 and MS4SP1) were submitted for TCLP analysis for arsenic.
- Sample MS4SP1 was also submitted for TCLP analysis for cadmium and zinc.

10 QUALITY ASSURANCE AND QUALITY CONTROL ASSESSMENT

The QA/QC was implemented for this assessment in accordance with the SAQP. A review of the quality assurance and quality control procedures has been undertaken and is described below, along with review of QA/ QC data.

10.1.1 Field QA / QC Samples

Field QC samples for this sampling comprised of field duplicate and triplicate samples, and a trip blank. Details of the types of QC samples collected during the fieldwork are presented below.

Field duplicates / triplicates: Individual samples were split in the field by the field staff and placed in three separate containers. The samples were homogenised prior to splitting to heterogeneity between samples. The primary, duplicate and triplicate samples were sent to the primary laboratory and the triplicate sample was sent to the secondary laboratory by the primary laboratory. The analysis of field duplicate samples provides an assessment of the precision of the sampling and laboratory analytical procedures. The analysis of field triplicate samples provides an independent check of the accuracy of the primary laboratory analytical results.

Intra-laboratory field duplicate samples and inter-laboratory triplicate samples were collected in general accordance with industry standard 1 in 10 duplicate and 1 in 20 triplicate criteria. Both duplicate and triplicate QC samples were analysed for all relevant COPCs. Field duplicate and triplicate samples are summarised in Table 4 below.

Rinsates: During sampling events where sampling equipment was used such as hand augers or stainless steel trowels to collect the sample, a rinsate sample was collected from the decontaminated equipment using deionised water. The rinsate sample ensures that no cross contamination of the sample from the sampling equipment has occurred.

QC samples were submitted to SGS Australia Pty Ltd (SGS). Inter-laboratory duplicate sample (field QC triplicate sample) was submitted to a secondary laboratory, MGT. SGS and MGT are both National Association of Testing Authorities (NATA) accredited laboratories.

Table 4: Summary of Field Duplicate and Triplicate Samples

Sample ID	Sampling Date	Description	Matrix
QC1	23/07/2009	Duplicate of RE10 0.0-0.2 m	Soil
QC1	8/10/2009	Duplicate of MW8	Water
QC2	24/07/2009	Duplicate of RE41 0.0-0.2 m	Soil
QC3	27/07/2009	Duplicate of RE34 0.0-0.2 m	Soil
QC4	28/07/2009	Duplicate of K1 0.0-0.2 m	Soil
QC5	28/07/2009	Duplicate of MS3-1 0.0-0.2 m	Soil

Sample ID	Sampling Date	Description	Matrix
QC6	30/07/2009	Duplicate of MS1-1 0.0-0.2 m	Soil
QC7	30/07/2009	Duplicate of MS1-14 0.0-0.2 m	Soil
QC8	4/08/2009	Duplicate of MP1 0.0-0.2 m	Soil
QC9	5/08/2009	Duplicate of MP14 0.0-0.2	Soil
QC10	5/08/2009	Duplicate of SP1	Soil
QC11	6/08/2009	Duplicate of MS4-1 0.0-0.2 m	Soil
QC12	6/08/2009	Duplicate of MS4-12 0.0-0.2 m	Soil
QC13	7/08/2009	Duplicate of MS4-39 0.0-0.2 m	Soil
QC14	7/08/2009	Duplicate of DC8	Soil
QC15	13/08/2009	Duplicate of MS4SP1	Soil
QC16	13/08/2009	Duplicate of SW1	Water
QC1A	8/10/2009	Triplicate of MW8	Water
QC2A	24/07/2009	Triplicate of RE41 0.0-0.2 m	Soil
QC3A	27/07/2009	Triplicate of RE34 0.0-0.2 m	Soil
QC4A	28/07/2009	Triplicate of K1 0.0-0.2 m	Soil
QC5A	28/07/2009	Triplicate of MS3-1 0.0-0.2 m	Soil
QC6A	30/07/2009	Triplicate of MS1-1 0.0-0.2 m	Soil
QC7A	30/07/2009	Triplicate of MS1-14 0.0-0.2 m	Soil
QC8A	4/08/2009	Triplicate of MP1 0.0-0.2 m	Soil
QC9A	5/08/2009	Triplicate of MP14 0.0-0.2	Soil
QC10A	5/08/2009	Triplicate of SP1	Soil
QC11A	6/08/2009	Triplicate of MS4-1 0.0-0.2 m	Soil

Sample ID	Sampling Date	Description	Matrix
QC12A	6/08/2009	Triplicate of MS4-12 0.0-0.2 m	Soil
QC13A	7/08/2009	Triplicate of MS4-39 0.0-0.2 m	Soil
QC14A	7/08/2009	Triplicate of DC8	Soil
QC100A	25/11/2009	Triplicate of MS3-16_0.0-0.2	Soil

Field duplicate and triplicate results along with their respective calculated relative percent difference (RPD) values are presented in Table LR10.

RPD was calculated between each analyte concentration detected in primary samples and that detected in duplicate and triplicate samples. RPDs were all within the industry acceptable range of 50% for concentrations greater than 5 times LOR and 150% for concentrations less than 5 times LOR, with the exception of the following:

RE34 0.0-0.2 m and DUP3A – recorded RPDs for lead of 95% and zinc of 94%;

- MS1-1 0.0-0.2 m and DUP6A – recorded RPD for copper of 59%;

MS1-14 0.0-0.2 m and DUP7A – recorded RPD for zinc of 54%;

MS4SP1 and QC15 – recorded RPDs for arsenic of 129%, cadmium of 162%, copper of 57%, nickel of 102% and zinc of 169%; and

MS4-39 0.0-0.2 m and QC13A – recorded RPDs for mercury of 105% and zinc of 67%.

The elevated RPDs identified above are considered to indicate variation that is likely to be attributable to minor sample heterogeneity. This is not considered to be significant as sample heterogeneity is likely to be reflected across all of the results for metals, and do not necessarily indicate lack of accuracy or precision in the sampling or laboratory methods.

10.2 Laboratory Quality Assurance and Quality Control

The quality control (QC) testing conducted internally by the laboratory consisted of laboratory split duplicates, laboratory reagent blanks, laboratory matrix spike, matrix spike duplicate recovery samples, laboratory control samples and surrogate spikes. The results of the laboratory QC testing are included with each of the NATA certified laboratory reports in Appendix B.

10.2.1 Laboratory QA / QC Results

Samples were received by the laboratories in good order, with the correct documentation and were properly chilled. All samples were analysed for the COPCs within the recommended holding times. Certified laboratory reports and Chain of Custody (COC) documentation is presented in Appendix B along with the signed sample receipt advice for all samples. Laboratory QA / QC information is included in the laboratory reports.

QA / QC procedures used by SGS Laboratories to determine the accuracy and precision of the analyses are detailed as follows:

- Analysis of method blanks to determine any contamination from the analytical process, conducted at a frequency of 1 in 20 samples. No target analytes were detected in the method blanks, indicating that the analytical method was satisfactory and no contamination occurred.
- Analysis of duplicate samples and laboratory splits of field samples to determine the precision of the analytical method in a given sample matrix. Expressed as RPD, precision should be an average RPD of <±20% for high concentrations and <±50% for low concentrations for laboratory duplicates. Laboratory duplicates were analysed at a frequency of 1 in 10 and overall completeness was greater than 95%. All RPDs of laboratory duplicate samples were found to be within the acceptable limits, with the exception of a laboratory duplicate sample of MS4-27 0.0-0.2 m which returned a RPD of 52%for lead.
- Analysis of laboratory control samples (LCS), which is a standard reference material which contains representative analytes and is externally prepared and supplied, to determine the accuracy of the analytical method. Accuracy should be in the range 70-130% and analysed at a frequency of 1 in 20. All LCS were found to be within the acceptable limits.
- Analysis of recovery samples, a laboratory prepared sample known to contain an amount of analyte comparable to the concentration expected for the sample batch and of a matrix representative of the analytical batch, to determine the efficiency of the extraction of the analyte. The recovery should be in the range 70-130% expressed as a percent of known content and should be run once per process batch. All recovery samples were found to be within the acceptable limits.
- Analysis of surrogate spikes and internal standards, where appropriate, that were added to all samples just before extraction. Surrogate spikes should be a known concentration of a compound which is not expected to be found in the sample will not interfere with quantification of the analyte and may be separately and independently quantified. Surrogate spikes monitor the method precision in a given sample matrix and are expressed as percent recovery of known content. The precision of percent recovery should be in the range 70-130%. All surrogate spike recoveries and internal standard recoveries were found to be within the acceptable limits.

In summary, Coffey considers that laboratory QC results to be acceptable for the purposes of this assessment.

10.2.2 Data Quality Assessment

In summary, the data quality assessment indicates that:

- The sample data and laboratory analytical results obtained are valid and meet the data quality objectives set for this assessment;
- Documentation, including signed COCs confirming the samples, and field calibration records are complete and copies provided in this report;
- Overall completeness is above 95% with all samples collected and analysed in accordance with the sampling strategy with the exception of selected COPCs. Field and laboratory QA / QC procedures, and results confirm satisfactory field sampling and laboratory procedures were achieved and all field data and analytical results collected for the assessment are valid.

- All samples were collected by an experienced field scientist with an established industrial standard sampling protocol and the samples were analysed by SGS and MGT, both NATA certified laboratory, using standard analytical methods. These indicate satisfactory data comparability.

Therefore Coffey concludes that the data collected is representative.

11 ASSESSMENT RESULTS

11.1 Field Observations

Extensive site walkovers were conducted as part of this assessment to confirm the presence/absence of mine sites across the site. An additional mine shaft was discovered at Mine Site 4 during these site walkovers. However, evidence of previously documented Mine Sites MSS2 and MSS5 was not encountered.

The site walkovers identified the following features at each of the AECs:

DOI 1 – Mine Site 3

- One mine Shaft;
- Small volume stockpiles of material located around the opening to the mine shaft.

DOI 2 – Mine Site 4

- One mine Shaft;
- One mine adit;
- 2 open cut mine areas;
- 4 stockpiles of clayey material located close to the open cut mine areas (referred to as clay quarry stockpiles).

DOI 2 – Mineral Processing Area

- Remnant infrastructure including wooden posts and concrete slab;
- 2 sumps located around the remnant infrastructure.

DOI 3 – Kiln Area

- Brick kiln

DOI 3 – Mine Site 1

- One mine Shaft;
- A stockpile of material located proximate to the opening to the mine shaft.

DOI 4 – Sheep Dip Area

- Remnant sheep dip infrastructure, including the sheep dip, scooping mound and concrete drainage area;
- Remnant pen infrastructure (wooden posts).

DOI 5

- No AECs were identified in this DOI.

11.2 Groundwater – Field Measurements

Total Dissolved Solids results for groundwater were estimated based on Electrical Conductivity measurements conducted in the field. Total Dissolved Solids (TDS) ranged from 336 (MW1) and 825mg/L (MW8), with an average TDS value of 304mg/L.

Groundwater elevation at each well was calculated from the gauged depth to water and surveyed well head levels. Groundwater elevation at each well is shown on Figure 9, along with interpreted groundwater contours.

11.3 Laboratory Results - Soils

The laboratory results for soils are reported alongside the adopted assessment criteria in Tables LR1 to LR6. Results for pH, Nett Acid Generation Potential (NAGP), total sulphur and total oxidisable sulphur are presented in Table LR9. Results exceeding the adopted HIL criteria are also shown on the respective Figures. Laboratory results for the predefined areas within each DOI indicated the following:

11.3.1 DOI 1

Laboratory results for DOI 1 are presented in Table LR1.

Residential Area

- A surface sample collected at location RE34 returned an arsenic concentration of 130 mg/kg above the adopted HIL A criterion (100 mg/kg) and the EIL criterion (20 mg/kg). The above sample was subsequently submitted for TCLP analysis and returned a leachable concentration below the laboratory LOR. Samples were subsequently collected in the area immediately adjacent to RE34 (RE34-a to RE34-d), to investigate the recorded arsenic at this location. These samples returned results that were within normal background range, and well below the EIL and HIL-A criteria.
- All other samples analysed for arsenic in this set returned concentrations below the adopted HIL-A and EIL criteria;
- All samples submitted for analysis of cadmium, chromium, copper, lead, mercury, nickel and zinc returned concentrations below HIL A and EIL criteria.

Mine Site 3

- 14 surface samples collected at locations MS3-1 to MS3-2 and MS3-4 to MS3-15, and one subsurface sample at MS3-13 (at 0.5 – 0.6m bgl) returned arsenic concentrations above the adopted HIL-A criterion (100 mg/kg). Results for arsenic in this set ranged from 100 mg/kg up to 2900 mg/kg. All other samples in this set returned arsenic concentrations that exceeded the EIL (20 mg/kg), but were below the HIL-A criterion.
- 10 surface samples collected at locations MS3-1 to MS3-2, MS3-4 to MS3-8 and MS3-12 to MS3-14, and one subsurface sample at MS3-13 (at 0.5-0.6m bgl) returned lead concentrations above the adopted HIL-A criterion (300 mg/kg). Results for lead in this set ranged from 330 mg/kg up to 5200 mg/kg.
- All other samples analysed for lead returned concentrations below the adopted HIL-A and EIL criteria.

- 2 surface samples collected from investigation locations MS3-7 and MS3-8 returned cadmium concentrations above the adopted HIL A criterion (20 mg/kg), while at 4 other locations cadmium exceeded the EIL criterion (3 mg/kg). Results for cadmium in this set ranged from 11 mg/kg up to 47 mg/kg.
- All other samples analysed for cadmium returned concentrations below the adopted HIL A and EIL criteria
- All samples submitted for analysis of chromium, copper, lead, mercury, nickel and zinc returned concentrations below adopted HIL A and EIL criteria.
- TCLP analysis of the surface sample collected at location MS3-8 returned a result for arsenic of 0.44 mg/L, cadmium 0.18 mg/L and lead of 0.16 mg/L.

Mine Site 3 Stockpiles

- 1 sample (MS3SP3) collected from 1 of the 3 stockpiles likely to have been generated from activities at Mine Site 3 returned an arsenic concentration above the adopted HIL-A criterion (100 mg/kg) of 130 mg/kg. The 2 other samples (MS3SP1 and MS3SP3) returned arsenic concentrations above the adopted EIL criterion (20 mg/kg). All other metal concentrations in these samples were above the laboratory LOR but below the adopted EIL criteria.
- 3 samples collected each of the 3 stockpiles located at Mine Site 3 and were submitted for Net Acid Generation Potential (NAGP) and Net Acid Generation (NAG). Results for NAGP and NAG analysis are presented in Table LR9. The NAGP and NAG indicate that acidic conditions would not occur as a result of oxidisation of these materials.

11.3.2 DOI 2

Laboratory results for DOI 2 are presented in Table LR2.

Residential Area

- All 6 residential area samples analysed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) returned concentrations above the laboratory limits of reporting (LOR) but below the adopted EIL criteria.
- 3 surface samples (RE24, RE30 and RE35) were submitted for OCP and OPP analysis and returned concentrations below laboratory LOR.

Open Space Area

- 1 surface sample (OS20) returned an arsenic concentration marginally above the adopted EIL criterion (20 mg/kg) of 23 mg/kg, but well below the adopted HIL- A criterion (100 mg/kg). However, subsequent sampling conducted at this location (OS20-a to)S20-d) did not confirm this level, or identify any extent of contamination.
- Remaining samples analysed for metals returned concentrations below EIL criteria.
- 3 surface samples (OS15, OS16 and OS19) were submitted for OCP and OPP analysis and returned concentrations below laboratory LOR.

Mine Site 4

- 4 surface samples (MS4-14, MS4-22, MS4-23 and MS4-27) returned arsenic concentrations above the adopted EIL criterion (20 mg/kg) but below the adopted HIL A criterion (100 mg/kg). Arsenic concentrations ranged from 26 mg/kg to 55 mg/kg in this set. The remaining samples analysed for arsenic in Mine Site 4 samples returned concentrations well below the adopted EIL criterion.
- 1 surface sample (MS4-14) returned a cadmium concentration of 48 mg/kg, exceeding the adopted HIL-A criterion (20 mg/kg). 1 depth sample, MS4-26A (0.5-0.6m bgl) returned a concentration of 240 mg/kg, significantly exceeding the HIL-A criterion (20 mg/kg).
- 8 surface samples (MS4-7 to MS4-9, MS4-14, MS4-15, MS4-23, MS4-26A and MS4-27) returned cadmium concentrations above the adopted EIL criterion (3 mg/kg). Results for cadmium in this set ranged from 3.5 mg/kg to 9.6 mg/kg.
- Remaining samples analysed for cadmium returned concentrations below the adopted EIL criterion.
- 8 surface samples (MS4-7 to MS4-8, MS4-14, MS4-23, MS4-27, MS4-37 to MS4-39) returned copper concentrations above the adopted EIL criterion (100 mg/kg) but below the adopted HIL A criterion. Results for copper in this set ranged from 120 mg/kg to 530 mg/kg. Remaining samples analysed for copper returned concentrations below the adopted EIL criterion.
- 17 surface samples (MS4-7 to MS4-9, MS4-12 to MS4-15, MS4-18, MS4-22 to MS4-27 and MS4-37 to MS4-39) returned lead concentrations above the adopted HIL A (300 mg/kg). Results for lead in this set ranged from 420 mg/kg to 46000 mg/kg.
- 4 subsurface samples (MS4-12 to MS4-13, MS4-25 and MS4-26A) returned lead concentrations above the adopted HIL-A (300 mg/kg). Results for lead in this set ranged from 390 mg/kg to 1400 mg/kg. Remaining samples analysed for lead returned lead concentrations below the adopted HIL-A (300 mg/kg) and EIL criterion (600 mg/kg).
- 4 samples (MS4-27 and MS4-37 to MS4-39) returned mercury concentrations above the adopted EIL criterion (1 mg/kg) but below the adopted HIL A criterion (15 mg/kg). Results for mercury in this set ranged from 2.2 mg/kg to 3.7 mg/kg. Remaining samples returned mercury concentrations either below the EIL criterion (1 mg/kg) or below the laboratory LOR.
- All samples analysed for chromium and nickel returned concentrations below the adopted EIL criteria.
- Zinc concentrations were detected above the adopted HIL-A criterion (7000 mg/kg) in 4 surface samples (MS4-7, MS4-8, MS4-14, MS4-27) and one depth sample (MS4-26A at 0.5 – 0.6m bgl). Results for zinc in this set ranged from 8900 mg/kg to 57000 mg/kg).
- Zinc concentrations were detected above the adopted EIL criterion (200 mg/kg) in 21 surface samples (MS4-9, MS4-10, MS4-12, MS4-13, MS4-15 to MS4-19, MS4-21 to MS4-26, MS4-29 to MS4-31and MS4-37 to MS4-39). Results for zinc in this set ranged from 200 mg/kg to 2400 mg/kg.

Mine Site 4 Stockpile

- 1 sample (MS4SP1) returned an arsenic concentration of 200 mg/kg above the adopted HIL A criterion (100 mg/kg). Remaining samples returned arsenic concentrations below the adopted EIL criterion.
- 1 sample, MS4SP1 returned a cadmium concentration of 350 mg/kg exceeding the adopted HIL-A criterion (20 mg/kg) and sample MS4SP5 returned a concentration of 4.9 mg/kg exceeding the EIL

criterion (3 mg/kg). Remaining samples returned cadmium concentrations below the adopted EIL criterion.

- 3 samples (MS4SP1, MS4SP5 and MS4SP9) all returned copper and mercury concentrations above the adopted EIL criterion (100 mg/kg). Results for copper in this set ranged from 190 mg/kg to 360 mg/kg. Remaining samples returned copper concentrations below the adopted EIL criterion.
- 4 samples (MS4SP1, MS4SP5, MS4SP7 and MS4SP9) returned lead concentrations above the adopted HIL-A criterion (300 mg/kg). Results for lead in this set ranged from 14000 to 54000 mg/kg.
- One sample, MS4SP1 returned a zinc concentration of 130,000 mg/kg, significantly exceeding the adopted HIL-A criterion (7000 mg/kg). All other samples returned zinc concentrations above the adopted EIL criterion (200 mg/kg) ranging from 360 mg/kg to 810 mg/kg.
- 3 samples (MS4SP1, MS4SP5, MS4SP9) returned mercury concentrations above the EIL (1 mg/kg) criterion but below the HIL-A criterion (15 mg/kg). The remaining samples returned mercury concentrations below the EIL criterion.
- Sample MS4SP1 was subsequently submitted for TCLP analysis for arsenic, cadmium and zinc and returned a leachable arsenic concentration below the laboratory LOR, a cadmium concentration of 1.7 mg/L and a zinc concentration of 490 mg/L.
- Sample MS4SP9 was also submitted for TCLP analysis for lead and returned a leachable lead concentration of 500 mg/L.
- 10 samples collected from this stockpile were submitted for Net Acid Generation Potential (NAGP) and Net Acid Generation (NAG). Results for NAGP and NAG analysis are presented in Table LR9. The NAGP and NAG results indicate that acidic conditions would not occur as a result of oxidisation of these materials.

Former Clay Quarry Stockpiles

- 3 samples at the Mine Site 4 clay quarry stockpiles (SP1 to SP3) returned zinc concentrations above the adopted EIL criterion (200 mg/kg), ranging from 200 mg/kg to 450 mg/kg. Remaining metal concentrations were generally above the laboratory LOR but below the adopted EIL and HIL - A criteria.

Mineral Processing Area

- 10 surface samples (MP4 to MP6 and MP9 to MP15) returned arsenic concentrations above the adopted EIL criterion (20 mg/kg), but below the HIL-A criterion (100 mg/kg). 8 subsurface samples (MP5 and MP9 to MP15) also returned arsenic concentrations above the adopted EIL criterion. Results in this set for arsenic ranged from 20 mg/kg to 96 mg/kg.
- 4 surface samples (MP6 and MP14 to MP16) and 3 subsurface samples returned lead concentrations above the adopted HIL A criterion (300 mg/kg). Results for lead ranged between 300 mg/kg to 400 mg/kg. Remaining samples submitted for lead analysis returned concentrations below the adopted EIL criterion.
- 25 surface and subsurface samples collected from 14 investigations locations (MP3 to MP16), returned zinc concentrations above the adopted EIL criterion (200 mg/kg). Results for zinc in this set ranged from 200 mg/kg to 660 mg/kg.

- 2 samples (MPSUMP-1 and MPSUMP-2) collected at sumps located within the mineral processing area returned arsenic, cadmium and zinc concentrations above the adopted EIL criteria. Zinc in MPSUMP-2 with a concentration of 8100 mg/kg, also exceeded the HIL – A criterion (7000 mg/kg).
- All other results for metals within the mineral processing area were below the adopted EIL criteria.
- 2 surface samples from the mineral processing area (at MP2 and MP4) as well as the 2 sump samples (MPSUMP-1 and MPSUMP-2) were also analysed for OCPs and OPPs, which returned concentrations below laboratory LOR.
- Surface sample MP15 was submitted for TCLP analysis for lead and returned a leachable concentration of 0.07 mg/L.

11.3.3 DOI 3

Laboratory results for DOI 3 are presented in Table LR3.

Residential Area

- All samples collected from the Residential Area returned metals concentrations above laboratory LOR but below the adopted EIL criteria.
- 5 surface samples from investigation locations RE10, RE15, RE20 and RE25 were submitted for OCP and OPP analysis and all returned concentrations below the laboratory LOR.

Open Space Area

- All samples collected from the Open Space Area returned metal concentrations generally above laboratory LOR but below the adopted EIL criteria.
- 2 surface samples from investigation locations OS05 and OS10 were submitted for OCP and OPP analysis and returned concentrations below the laboratory LOR.

Mine Site 1

- A surface and subsurface sample from investigation location MS1-7 returned a zinc concentration of 220 mg/kg and 210 mg/kg respectively, which were marginally above the adopted EIL criterion (200 mg/kg). All other metals concentrations in samples collected from this location returned values generally above the laboratory LOR but below the adopted EIL criteria.
- Remaining samples collected within the Mine Site 1 Area returned metal concentrations above the laboratory LOR but below the adopted EIL criteria.

Mine Site 1 Stockpile

- 2 samples collected from a stockpile located within the Mine Site 1 Area (MS1SP1 and MS1SP3), likely to have been generated from activities at Mine Site 1, returned metals concentrations generally above the laboratory LOR but below the adopted EIL criteria.
- 4 samples collected from the Mine Site 1 Stockpile were submitted for Net Acid Generation Potential (NAGP) and Net Acid Generation (NAG). Results for NAGP and NAG analysis are presented in Table LR9. The NAGP and NAG results indicate that acidic conditions would not occur as a result of oxidisation of these materials.

Kiln Area

- All samples collected from the kiln area to a maximum depth of 0.6 m bgl returned pH values between 7.9 and 8.7.
- All samples collected from the Kiln Area returned PAH concentrations below laboratory LOR and the adopted EIL and HIL - A criteria.

11.3.4 DOI 4

Laboratory results for DOI 4 are presented in Table LR4.

Residential Area

- 5 surface samples collected from the Residential Area returned metals concentrations above laboratory LOR but below the adopted EIL criteria.
- A surface sample from investigation location RE12 was also submitted for OCP and OPP analysis and returned concentrations below laboratory LOR.

Open Space Area

- 4 surface samples collected from the Open Space Area returned metals concentrations generally above laboratory LOR but below the adopted EIL criteria.
- A surface sample from investigation location OS06 was also submitted for OCP and OPP analysis and returned concentrations below laboratory LOR.

11.3.5 DOI 5

Laboratory results for DOI 5 are presented in Table LR5.

Residential Area

- A surface sample collected at RE18 0.0-0.2 returned a zinc concentration of 1100 mg/kg, which was above the adopted EIL criterion (200 mg/kg) but below the adopted HIL A criterion.
- Remaining samples collected within the residential area returned metals concentrations generally above the laboratory LOR but below the adopted EIL criteria.
- 3 surface samples (at RE16, RE17 and RE27) were submitted for analysis of OCPs and OPPs and returned concentrations below the laboratory LOR.

Open Space Area

- All samples submitted for metals analysis from the Open Space Area returned concentrations generally above the laboratory LOR but below the adopted EIL and HIL A criteria.
- One surface sample (OS01) was submitted for analysis of OCPs and OPPs and returned concentrations below the laboratory LOR.

11.3.6 Drainage Channels

Laboratory results for drainage channel samples are presented in Table LR6.

- Sample DC2 returned a zinc concentration of 210 mg/kg, which was marginally above the adopted EIL criterion (200 mg/kg). Remaining metals concentrations detected in this sample were above the laboratory LOR but below the adopted EIL (and HIL – A) criteria.
- Sample DC13 returned an arsenic concentration of 33 mg/kg, which was above the adopted EIL criterion (20 mg/kg). Remaining metals concentrations in this sample were above the laboratory LOR but below the adopted EIL (and HIL – A) criteria. Subsequent sampling and analysis conducted at DC12 (DC12-a to DC12-d), downgradient and in the region of DC13, returned arsenic concentrations within normal background range, and well below the EIL and HIL-A criteria.
- All other drainage channel samples submitted for metals analysis returned concentrations generally above the laboratory LOR but below the adopted EIL criteria.
- All samples submitted for OCP and OPP analysis returned concentrations below the laboratory LOR.

11.4 Laboratory Results - Waters

11.4.1 Groundwater and Surface Water

Laboratory results for groundwater and surface water samples are presented in Table LR7.

- All groundwater and surface water samples analysed for cadmium, mercury and OCPs returned concentrations below the adopted criteria, and generally below the laboratory LOR;
- Chromium was below the laboratory LOR in all samples except for groundwater at MW3. At MW3, a result of 0.002 mg/L was recorded, marginally exceeding the laboratory LOR and the adopted criteria of 0.001 mg/kg. However, it is noted that this criteria is conservative, and directly applicable to Cr(VI), not likely to be present at the site;
- Samples MW1, MW7 and MW8 returned arsenic concentrations exceeding the adopted criterion of 0.013 mg/L. Remaining groundwater and surface water samples returned arsenic concentrations below either the adopted criterion or the laboratory LOR;
- 6 groundwater samples (MW1 to MW4, MW 6 and MW8) returned lead concentrations exceeding the adopted criterion of 0.0034 mg/L. Samples MW5 and MW7 returned concentrations below the adopted criterion, of which MW7 returned a concentration below the laboratory LOR. All of the collected surface water samples (SW1, SW2 and SW3) returned results below the laboratory LOR for lead;
- All groundwater samples returned nickel concentrations below the adopted criterion of 0.011 mg/L, of which sample MW3 and the 3 surface water samples returned a concentration below the laboratory LOR for nickel.
- 4 groundwater samples (MW2, MW4 to MW6 and MW8), and the 3 surface water samples, returned zinc concentrations exceeding the adopted criterion of 0.008 mg/L. Samples MW1, MW3 and MW7 returned zinc concentrations above the laboratory LOR but below the adopted criterion;
- 4 groundwater samples (MW1, MW2, MW3 and MW6), and 2 surface water samples (Sw2 and SW3), returned copper concentrations exceeding the adopted criterion of 0.0014 mg/L. Samples MW4, MW5, MW8 and Sw1 returned copper concentrations either at or below the LOR;

- Sulfate was detected in all groundwater and surface water samples at concentrations ranging from 11 mg/L to 200 mg/L, and appeared to be generally higher in groundwater samples. This is below the adopted criteria of 400 mg/L for sulphate (ANZECC 1992);
- The pH of groundwater was observed to be neutral to slightly alkaline in all samples analysed.

11.5 TCLP Analysis

Laboratory results for TCLP analysis are presented in Table LR8.

DOI 1

- Sample MS3-8_0.0-0.2 returned TCLP concentrations for arsenic (0.44 mg/L), cadmium (0.18 mg/L) and lead (0.16 mg/L) above the laboratory LOR but below the TCLP criteria identified in the Waste Classification Guidelines.
- Sample RE34_0.0-0.2 returned a TCLP concentration for arsenic (<0.05 mg/L) below the laboratory LOR.

DOI2

- Samples MS4-27_0.0-0.2 and MS4SP9 returned TCLP concentrations for lead (370 mg/L and 500 mg/L) exceeding Restricted Solid Waste in the Waste Classification Guidelines.
- Sample MS4SP1 returned TCLP concentrations for cadmium (1.7 mg/L) exceeding General Solid Waste but below Restricted Solid Waste in the Waste Classification Guidelines. Zinc returned a TCLP concentration of 490 mg/L, however no criteria exists for zinc in the Waste Classification Guidelines.
- Arsenic was below the laboratory LOR in both samples (MS4SP1 and MS4-26A_0.5-0.6) analysed for this parameter.

12 RESULTS DISCUSSION

12.1 Soils and Sediments

In accordance with the SAQP, sampling of soils was conducted across each of the Domains of Interest in order to:

1. Provide confidence that there has been no anthropogenic impact to areas outside of the identified AECs - Sampling Strategy 1; and
2. To confirm the lateral and vertical extent of contamination within the AEC areas, where potentially contaminating activities were identified – Sampling Strategy 2.

In addition, field observation and inspections were carried out in order to confirm the potential AEC areas, and sediment samples were also collected from watercourses in order to assess the migration of contaminants via sediment transport. In execution of these sampling strategies, a higher sampling density was generally achieved in the AEC areas, compared to the areas outside of the AEC areas where there was no historical evidence of anthropological contamination. These areas have generally been designated for residential or open space use in the proposed development.

The results are discussed for each of the DOI areas in the following sections. Statistical analysis of sample sets for selected areas are also discussed below. Statistical calculations are provided in Appendix G.

12.1.1 DOI 1

DOI 1 is located in the south western corner of the site and includes Mine Site 3. Laboratory analysis of soil samples collected across DOI 1 indicates that contamination concentrations above the adopted HIL-A criteria were identified at Mine Site 3 and at sample location RE34.

Mine Site 3

Inspection of the historical Mine Site 3 identified one mine Shaft and small volume stockpiles of material located around the opening to the mine shaft.

Contaminants detected within Mine Site 3 in surface and subsurface soils included arsenic, cadmium and lead at concentrations above the adopted HIL-A criteria, and copper and zinc at concentrations above the adopted EIL criteria. The contaminants detected in this area are considered to be associated with natural mineral bearing rock present within the Mine Site 3 area at the surface and at depth. It is noted that surface and subsurface samples obtained during the current field investigation were collected from skeletal soils and underlying weathered rock which was broken up using a hand auger, and both the surface samples and underlying samples generally returned elevated results. The site history provided in the PB report (2007) indicates that no activity onsite has occurred since the 1960's. Due to the skeletal nature of the soils in this area, it is likely that surface soils have originated from the weathered underlying rock rather than mining spoils, given the period since mining activities ceased in the area.

The site history does not suggest that chemical processing has occurred at this location, which may have concentrated metals in this area. This is supported by low leaching potential detected in material submitted for TCLP analysis.

Vertical delineation of the contamination in this area has not been defined due to refusal on rock underlying the skeletal surface and subsurface soils. Evidence of mining activities (mine shaft and stockpile) and the high metal concentrations detected across Mine Site 3 suggest that elevated metal concentrations are likely to be encountered at depth within the underlying rock in this area.

Samples collected across the Mine Site 3 area indicates that metal contamination present within skeletal surface and near surface soils extends across the mine site area, as indicated by history and visual observation. An additional round of sampling was conducted on the 25 November 2009 to further delineate the metal contamination encountered across Mine Site 3. The delineation samples returned arsenic concentrations marginally exceeding the adopted EIL criterion but below the adopted HIL A criterion. Remaining metal concentrations detected in these samples were generally above the laboratory LOR but below the adopted EIL criteria. The concentrations detected in these samples are considered to represent the extent of the Mine Site 3 area, and concentrations detected in the delineation samples are also considered suitable for the proposed development and do not pose a risk to the environment in the context of the site. The delineation of areas with exceeding metals results is shown in Figure 5.

It is considered that the concentrations detected within the Mine Site 3 area are not suitable for the proposed residential or open space development and would require management and / or remediation.

One sample (MS3SP3) collected from stockpile material associated with Mine Site 3 returned a lead concentration (120 mg/kg) marginally exceeding the adopted HIL-A (100 mg/kg) criterion and a zinc concentration exceeding the EIL criterion. A stockpile sample (MS3SP1) collected also from stockpile material associated with Mine Site 3 returned an arsenic concentration marginally above the adopted EIL criterion. Although it is likely that the concentrations detected in this stockpile can be attributed to natural mineralisation, the stockpile is likely to have been generated from mining activities at Mine Site 3, and so remediation of this material either through onsite containment or offsite disposal is considered warranted.

Residential and Open Space Areas

Results for soils outside of the delineated Mine Site 3 area, to be used for residential and open space use in the proposed development, returned results for all analytes that were below the HIL-A criteria, except for 1 location located downgradient of the mine Site 3 area. An arsenic concentration was detected above the adopted HIL-A criterion in a surface sample collected at location RE34. A subsurface sample was not collected at this location due to refusal on underlying rock. The concentration of arsenic (130 mg/kg) detected at this location was only marginally above the HIL-A criterion (100 mg/kg) and subsequent sampling and analysis at this location (4 samples RE34-a to RE34-d) did not confirm a ‘hot spot’ or any extent of contamination at this location. Further, the arsenic concentration at RE34 was below 250% of the HIL-A criterion. TCLP analysis for arsenic was conducted on this sample to assess the leachability of the material, and this result indicated a leachable arsenic concentration below the laboratory LOR.

Arsenic concentrations detected in samples collected across both the Mine Site 3 area and the proposed residential area in the vicinity of RE34 were recorded to be between two distinct ranges of 47 mg/kg to 130 mg/kg or 1600 mg/kg to 2900 mg/kg. The first range is considered to represent background levels in this portion of DOI 1 the second range is considered to represent contamination levels either concentrated by mining activities in the area or. Based the concentrations detected proximate to location RE34 and the above TCLP results, the concentration of arsenic detected at location RE34 is considered to likely represent natural mineralisation which has not been concentrated by mining activities.

Remaining sampling locations within the proposed residential and open space areas (not including Mine Site 3 or sample location RE34) across DOI 1 returned metals, OCPs and OPP concentrations below the adopted EIL and HILA criteria.

Therefore, based on the soils results obtained in this assessment for DOI 1, Coffey considers that the areas outside of the delineated Mine Site 3 within DOI 1 are suitable for either:

- Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or
- Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

12.1.2 DOI 2

DOI 2 is located in the south central portion of the site and includes the historical Mine Site 4 and Mineral Processing Area. Laboratory analysis of soil samples collected across DOI 2 indicates that contamination concentrations above the adopted HIL A criteria were identified at Mine Site 4 and the Mineral Processing Area.

Mine Site 4

Inspection of Mine Site 4 identified 1 mine Shaft, 1 mine adit, clay quarry area, 2 open cut mine areas and 4 stockpiles of clayey material located close to the Mine Site 4 area.

Contaminants detected within Mine Site 4 in surface and subsurface soils included cadmium, lead and zinc at concentrations above the adopted HIL-A criteria, and arsenic and copper at concentrations above the adopted EIL criteria. It is likely that mineral bearing rock is present within the Mine Site 4 area at the surface and at depth. The presence of mineral bearing rock in surface soils has been indicated by the presence of open cut mining in the area as well as high concentrations of lead in surface samples collected approximately 20 m up gradient of mine features (stockpiles, adits or shafts) where mining spoils are not likely to be encountered in surface soils. Discussions with field staff have also indicated that the surface soil samples were collected from in situ weathered rock that was broken up using a hand auger.

A total of ten broken rock samples (MS4SP1 to MS4SP10) were collected from stockpiles associated with mining activities at Mine Site 4. Five rock samples (MS4SP1, MS4SP3, MS4SP5, MS4SP7 and MS4SP9) were submitted for laboratory analysis for metals and all ten samples were submitted for Net Acid Producing Potential (NAPP) and Net Acid Generation (NAG). Rock samples returned metal concentrations exceeding the adopted HIL-A criteria for arsenic, cadmium, lead and zinc at concentrations similar to concentrations detected in skeletal surface soils across the Mine Site 4 area. It is likely that the rock samples represent mined material that has been either excavated from the surface or at depth either from the open cut mine area, adit or the mine shaft and has had minimal processing beyond excavation. The rock sample is therefore considered to represent high concentrations of natural mineralisation endemic to the local geology at Mine Site 4.

No evidence of secondary (crushing and/or sieving) or tertiary processing (chemical processing) of materials was observed except at the Mineral Processing area, where remnant infrastructure was observed and minor concentrations of cyanide was detected in 8 of the 9 samples analysed for this parameter. The Mineral Processing area did not have metals concentrations in the ranges detected at

Mine Site 4, however this may have be due to the successful extraction and capture of processed ore. Elevated concentrations of metals due to mineral processing do not appear to have occurred in this area.

TCLP analysis was conducted on sample MS4-26A 0.5-0.6 for arsenic and on MS4-27 0.0-0.2 for lead. Laboratory results returned a leachable arsenic concentration below the laboratory LOR and a leachable lead concentration of 370 mg/kg. Rock sample (MS4SP1) was submitted for TCLP analysis for arsenic (returning a result of <0.05 mg/L), cadmium (1.7 mg/L) and zinc (490 mg/L), and rock sample (MS4SP9) was submitted for TCLP analysis for lead (500 mg/L). The leachable concentrations detected for arsenic in MS4SP1 and lead in MS4SP9 were comparable to the leachable concentrations detected in soil samples collected across the Mine Site 4 area. The comparable leachable concentrations detected in both soil and rock samples suggest that tertiary processing of material has not occurred at this location and that the concentrations detected are a result of natural mineralisation. TCLP analysis for cadmium or zinc was only conducted on rock samples and not on soil samples collected across the Mine Site 4 area, therefore leaching rates are not comparable for these analytes.

Although high leachable concentrations were observed for Lead and zinc, NAG and NAGP analysis of rock samples collected from stockpiles associated with Mine Site 4 returned a negative Net Acid Generation Potential and a Net Acid Generation below the laboratory LOR. Based on the results of the NAG and NAGP, the TCLP test is considered to be very conservative in assessing the leachability of material in this area as it is unlikely that these materials would encounter in situ acidic conditions due to the neutralising capacity of the rock, if contained onsite under a Site Management Plan (SMP).

Vertical delineation of the contamination in this area has not been carried out due to refusal on rock underlying the skeletal surface and subsurface soils. Evidence of mining activities (mine shaft, adit and open cut excavation) and the high metal concentrations detected across Mine Site 4 suggest that elevated metal concentrations are likely to be encountered at depth within local geological formations in this area.

Samples collected across the Mine Site 4 area indicated that metals concentrations present within skeletal surface and near surface soils extends across the entire mine site area. An additional round of sampling was conducted on the 25 November 2009 to further delineate the metal contamination encountered across Mine Site 4. The delineation samples returned two zinc concentrations exceeding the adopted EIL criterion but below the adopted HIL A criterion. Remaining metals concentrations detected in these samples were generally above the laboratory LOR but below the adopted EIL criteria. The concentrations detected in these samples are considered to represent the extent of the Mine Site 4 area, and are considered suitable for the proposed development for residential or open space use. The delineation of areas with exceeding metals results is shown in Figure 6.

Samples SP1 – SP3, taken from 'clay quarry stockpiles' located close to Mine Site 4, returned zinc concentrations above the adopted EIL criterion (200 mg/kg), ranging from 200 mg/kg to 450 mg/kg. Remaining metal concentrations were generally above the laboratory LOR but below the adopted EIL and HIL - A criteria. These are discussed below as part of the areas suitable for development outside of the Mine Site 4 area.

The concentrations detected within the Mine Site 4 area are not suitable for the proposed development and will require management and /or remediation.

Mineral Processing Area

Inspection of the Minerals Processing Area identified remnant infrastructure including wooden posts and concrete slab as well as 2 sumps.

Concentrations of metals within the Mineral Processing Area in surface and subsurface soils included arsenic and zinc concentrations exceeding the adopted EIL criteria. One surface sample at location MP6 and surface and subsurface samples at location MP14 to MP16 returned lead concentrations in the range 300 mg/kg to 400 mg/kg, marginally above the adopted HIL A criteria (300 mg/kg). .

In order to assess the potential risk the identified contamination may pose to the environment and/or human health, the 95% Upper Confidence Limits (UCL) were calculated for arsenic, zinc and lead for samples from the Minerals Processing Area, and are discussed as follows.

The 95% UCL calculation for arsenic returned a concentration of 24.8 mg/kg, which marginally exceeds the adopted EIL criterion (20 mg/kg). During the current assessment a diversity of vegetation was observed in this area and no vegetation stress was observed. Based on this evidence, the arsenic concentrations detected across the Mineral Processing Area are not considered to pose an environmental risk in the context of the site. Due to the skeletal nature of the soils across the site, it is also anticipated that imported soil will be required for residential gardens, therefore exposure of future gardens to the skeletal surface soils currently onsite will be limited.

The 95% UCL calculation for lead for all samples in the Minerals Processing Area returned a concentration of 206.8 mg/kg, which is below the adopted HIL-A and EIL criterion. Based on the 95% UCL calculation, and that no single result exceeded 250% of the HIL-A criterion, the concentrations of lead detected in the Mineral Processing Area are considered to not pose an environmental or health risk for the proposed future development.

The 95% UCL calculation for zinc returned a concentration of 360.3 mg/kg, which exceeds the adopted EIL criterion, but is well below the adopted HIL-A criterion. Only 2 samples (MP14 and,MP15) exceeded the adopted EIL criterion by more than 250%, and no sample exceeded the HIL-A criterion. During the current assessment a diversity of vegetation was observed in this area and no vegetation stress was observed. In addition, due to the skeletal nature of the soils across the site, it is anticipated that imported soil will be required for residential gardens, therefore exposure of future gardens to the skeletal surface soils currently onsite will be limited. Based on the 95% UCL calculation and other evidence, the zinc concentrations detected in the Minerals Processing Area are not considered to not pose an environmental or health risk for the proposed future development.

Minor concentrations of cyanide below the adopted criterion were detected in 8 of 9 samples submitted for analysis of this contaminant. The concentrations detected suggest that some tertiary processing of mined material may have occurred in this area. However the low concentrations of cyanide detected and the low concentrations of metals detected in this area when compared to Mine Site 3 and Mine Site 4 indicate that tertiary processing of material in this area may not have been extensive.

Two sumps were identified within the Mineral Processing Area associated with mineral processing infrastructure. One sample was collected adjacent to each sump (MPSUMP-1 and MPSUMP-2). Arsenic and zinc were detected marginally exceeding the EIL criteria in MPSUMP-1. Arsenic, cadmium and zinc concentrations were detected in MPSUMP-2, exceeding the adopted EIL criteria, of which zinc also exceeded the HIL-A criterion. The concentrations of arsenic, cadmium and zinc detected in the sumps were generally higher than the concentrations detected across the Mineral Processing Area and samples collected during previous investigations indicate that these exceedences are localised and associated with the sumps. It is anticipated that the sump infrastructure will be demolished as part of the proposed development. Due to the minor volumes associated with this material it is recommended that the sumps and associated soils are excavated out as part of the demolition works and disposed offsite to licensed landfill.

Residential and Open Space Areas

Results for all other soils samples outside of the Mine Site 4 and Minerals Processing areas (discussed above), returned results for all analytes that were below the EIL and HIL-A criteria, except for sample OS20_0.0-0.2 discussed below.

Within this set, one sample (OS20_0.0-0.2) returned an arsenic concentration of 23 mg/kg, marginally exceeding the EIL criterion (20 mg/kg). Subsequent sampling and analysis was conducted adjacent to OS20 (OS20-a to OS20-d), which returned arsenic concentrations within normal background levels, and well below the EIL and HIL-A criteria. Therefore, the result at OS20 is not considered to represent any ‘hot spot’, or any extent of contamination at this location, and is not considered significant. Samples SP1 – SP3, taken from ‘clay quarry stockpiles’ located close to Mine Site 4, also returned zinc concentrations above the adopted EIL criterion (200 mg/kg), ranging from 200 mg/kg to 450 mg/kg. These are also less than 250% of the EIL criteria, and in areas where diversity of vegetation was observed. Based on this evidence, these results are also not considered significant.

Therefore, based on the soils results obtained in this assessment in DOI 2, Coffey considers that the areas outside of the delineated Mine Site 4, and following demolition of remnant minerals processing structures, are suitable for either:

- Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or
- Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

12.1.3 DOI 3

DOI 3 is located in the north eastern portion of the site and includes Mine Site 1 and the lime kiln area. Laboratory analysis of soil samples collected across the residential and open space areas in DOI 2 indicate that contamination concentrations were generally above the laboratory LOR but below the adopted EIL and HIL A criteria for all analytes.

Laboratory analysis of soil samples collected across Mine Site 1 indicate that contamination concentrations were generally above the laboratory LOR but below the adopted EIL and HIL A criteria for all analytes, with the exception of zinc at location MS1-7 in surface and subsurface soils which returned a concentration of 220 mg/kg and 210 mg/kg respectively, marginally above the adopted EIL criterion (200 mg/kg) which is not considered significant. .

Laboratory analysis of soil samples collected across the Kiln Area indicates that PAH contamination concentrations were below the laboratory LOR and adopted criteria.

Samples collected from Open Space and Residential Areas returned metal concentrations above the laboratory LOR but below the adopted EIL criteria. OCP and OPP concentrations were below the laboratory LOR for all samples analysed for these parameters.

Based on the analytical results from DOI 3 the contamination concentrations detected across this area including Mine Site 1 and the Kiln area are considered suitable for either:

- Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or
- Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

12.1.4 DOI 4

DOI 4 is located in the central northern portion of the site and includes the Sheep Dip Area. The Sheep Dip Area was not assessed as part of this investigation. Assessment and remediation of the Sheep Dip Area is to be completed as part of the validation works to be conducted as per the Remediation Action Plan dated (reference ENVICANB00233AA-R02).

Laboratory analysis of samples collected from the remaining residential and open space areas within DOI 4 indicate that contamination concentrations were generally above the laboratory LOR but below the adopted EIL and HIL A criteria for all analytes.

Based on the analytical results from DOI 4 the contamination concentrations detected across this area (excluding the Sheep Dip Area) are considered suitable for either:

- Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or
- Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

12.1.5 DOI 5

DOI 5 is located in the north western portion of the site. Laboratory analysis of soil samples collected across DOI 5 indicate that contamination concentrations were generally above the laboratory LOR but below the adopted EIL and HIL A criteria for all analytes, with the exception of 1 surface sample collected within the proposed residential area at location RE18, which returned a zinc concentration (1100 mg/kg) above the adopted EIL criterion (200 mg/kg), but below the adopted HIL A criterion (7000 mg/kg).

While the zinc result at RE18 exceeds 250% of the EIL criterion, statistical analysis of all residential and open space areas outside of the identified AEC areas meets the EIL criterion for zinc (as discussed at Section 12.1.7). Further, no mining activities have occurred in DOI 5 and all adjacent samples returned results below the EIL criterion. Therefore the concentration detected is considered to represent naturally occurring mineralisation. Therefore the concentration detected at location RE18, although exceeding the adopted EIL criterion, is not considered to represent a hot spot requiring remediation, nor pose a risk to environmental receptors in the proposed development.

Based on the analytical results from DOI 5 the contamination concentrations detected across this area are considered suitable for either:

- Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or
- Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

12.1.6 Drainage Channels

Samples collected from within the Drainage channels of Jumping Creek and its tributaries returned metal concentrations generally above the laboratory LOR but below the adopted EIL and HIL A criteria, with the exception of 2 samples (DC2 and DC13) which returned metal concentrations marginally above the adopted EIL criteria. Sample DC2 returned a zinc concentration of 210 mg/kg and DC13 returned an arsenic concentration of 33 mg/kg, both only marginally exceeding the EIL and not considered significant. The drainage channel results indicate that significant migration of contaminants via sediment transport in the watercourse has not occurred.

12.1.7 Statistical Analysis of Residential and Open Space Areas

Statistical analysis of metals results obtained from samples collected in residential and open space areas was carried out for each analyte, excluding:

- Samples with exceeding metals results representing Mine Site 3 area, as defined by Figure 5;
- Samples with exceeding metals results representing Mine Site 4 area, as defined by Figure 6;

Statistical calculations are provided in Appendix G, and show that the 95% UCL for all metals are below the EIL and HIL-A criteria, confirming that these areas are suitable for either:

- Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or
- Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

12.2 Groundwater and Surface Water

12.2.1 Groundwater

Groundwater monitoring wells were positioned across the site at locations where soil contamination concentrations had been detected above the adopted criteria, or where potential historical contamination in the area of the sheep dip may have impacted groundwater. Two (2) wells were positioned up gradient of these areas at Mine Site 3 and Mine Site 4 (MW1 and MW4 respectively). Remaining wells were positioned either within AEC areas or down gradient of the AEC areas, except for MW3 which is cross gradient from the Mine Site 3 area. The accurate locations of the wells with respect to the AEC areas are shown in Figure 3, as well as the detailed Figures 4, 5 and 6. The interpreted groundwater contours are shown in Figure 9. .

Laboratory results from the two groundwater monitoring wells up gradient of Mine Site 3 and Mine Site 4 (MW1 and MW4) indicate that background arsenic, lead, zinc and copper concentrations in groundwater at these locations exceed the adopted ANZECC& ARMCANZ criteria. Monitoring well MW1 returned arsenic (0.015 mg/L), copper (0.002 mg/L) and lead (0.006 mg/L) concentrations exceeding the adopted criteria (arsenic 0.013 mg/L, copper 0.0014 mg/L and lead 0.0034 mg/L) and monitoring well MW4 returned lead (0.03 mg/L) and zinc (0.008 mg/L) concentrations exceeding the adopted criteria. Monitoring well MW8 also returned arsenic (0.014 mg/L), lead (0.009 mg/L) and zinc (0.008 mg/L) concentrations exceeding the adopted criteria. MW8 was positioned down gradient of the sheep dip where no mining activities had previously occurred, therefore metal concentrations detected in this well are also considered to be representative of background groundwater levels of across the site.

Groundwater monitoring well MW2 was positioned down gradient of Mine Site 3, and MW3 may be either cross gradient or partially downgradient of Mine Site 3. Both locations returned copper, lead and zinc concentrations exceeding the adopted criteria. Metal concentrations detected in MW2 and MW3 compared to the up gradient well (MW1) were comparable for copper (0.002 mg/L) and lead (0.009 mg/L) in MW3. Copper concentrations (0.003 mg/L) in MW2 were also comparable to the up gradient well (MW1) however the lead concentration was significantly higher for lead (0.2 mg/L) and zinc (0.01 mg/L). However the background levels detected in up gradient wells are already at elevated concentrations.

Groundwater monitoring wells (MW5 and MW6) were positioned down gradient or within Mine Site 4. Concentrations of zinc were detected above the adopted criterion in MW5 and concentrations of copper, lead and zinc were detected above the adopted criteria in MW6. MW4 was positioned up gradient of MW5 and MW6 and also returned lead and zinc concentrations above the adopted criteria. The lead (0.03 mg/L) and zinc (0.008 mg/L) concentrations detected in MW4 were comparable to the lead (0.042 mg/L) and zinc (0.014 mg/L) concentrations detected in MW6. Copper concentrations were detected in MW4 and MW5 at 0.001 mg/L below the adopted criteria, in comparison copper concentration in MW6 were detected at 0.003 mg/L. Generally, the metal concentrations detected in the up gradient and down gradient monitoring wells are considered to be comparable are therefore likely to represent background metal concentrations in groundwater across the site.

Groundwater monitoring well MW7 was positioned down gradient of the Mineral Processing Area. Metal concentrations detected in this well were above the laboratory LOR but below the adopted criteria for copper, nickel and zinc, and exceeded the criterion for arsenic. Remaining metal concentrations in this well were below the laboratory LOR.

Groundwater monitoring well MW8 was positioned down gradient of the Sheep Dip Area. Arsenic, lead and zinc was detected in this well at concentrations exceeding the adopted criteria. Nickel was also detected above laboratory LOR but below the adopted criteria. Remaining metal concentrations were below the laboratory LOR. Due to the absence of mining activities in DOI4, and comparing the concentrations detected in other up gradient wells across the site, the contamination concentrations detected in MW8, although above the adopted criteria for arsenic, lead and zinc are considered to be representative of background concentrations across the site.

OCPs and OPPs in all groundwater samples were below the laboratory LOR. Although the laboratory LOR exceeds the adopted ANZECC guidelines, concentrations of OCPs and OPPs within groundwater are considered to pose a low risk to aquatic ecosystems based on the following:

- Only minor concentrations of OCPs (DDT) were previously detected in soils in the Sheep Dip area.
- DDT has a half life in soil of between 2 and 15 years (CDC, 2005). Based on anecdotal evidence (PB, 2007) no specific land use has occurred on the site including the use of the sheep dip since the 1960s. Therefore it is likely that significant levels of residual OCP or OPP contamination would have degraded over this time;
- OCPs and OPPs have a high affinity to soil and are generally restricted to surface and near surface soils. Groundwater across the site was encountered at depths ranging between 17 m bgl (MW7) and 37.3 m bgl (MW1). It is unlikely that OCPs or OPPs would be available for transport into groundwater at these depths.

Surface Water

Surface water was collected at three locations across the site from locations which were safe to access and had standing surface water. These locations were within the lower section of Jumping Creek. Upper areas of Jumping Creek and its tributaries were generally dry at the time of sampling. It is considered that surface water samples would not be representative of flowing surface water, as samples were collected from stagnant water pools.

Laboratory analysis of surface water samples detected concentrations of copper and zinc above the adopted criteria, except for SW1 which returned a copper concentration above the laboratory LOR but below the adopted criterion. Remaining metal concentrations were below the laboratory LOR. Concentrations of OCPs and OPPs were below the laboratory LOR.

The metal concentrations detected in surface water are consistent with concentrations detected in groundwater with the exception of arsenic and lead which were not detected above the laboratory LOR in any surface samples. This suggests that metals concentrations in surface water, like groundwater, are representative of regional mineralisation of the area, and not due to any anthropogenic processes. Further, as arsenic and lead were detected in upgradient groundwater (but not surface water); these results indicate that there may not be a significant connection between site groundwater, and the surface water in the lower section of Jumping Creek. Generally concentrations of metals in surface water samples, and also in sediment samples collected from the waterways, indicate that surface water flows are not a major transport route for metals at the site.

Coffey considers that the metals concentrations in surface water do not represent a risk to human health for the proposed site development, due to evidence suggesting that these concentrations are due to regional mineralisation. In addition, the levels recorded in surface water are well below guidelines for recreational water quality and aesthetics published in ANZECC & ARMCANZ 2000

13 CONCEPTUAL SITE MODEL

The following Conceptual Site Model (CSM) has been developed based on this current and previous assessment of the Site. The purpose of the CSM is to:

- Integrate all of the information available from the various sources;
- Confirm the significance of any data gaps;
- Determine potential migration and exposure pathways and human receptors to contamination;
- Provide a basis for evaluation of the risk to human health and the environment presented by contamination at the site; and
- Provide a basis remediation and management actions, discussed in the next Section.

The following CSM for the site was developed using ASTM E 1689-95 (2008) *Standard Guide for Developing Conceptual Site Models for Contaminated Sites*, as a guide.

13.1 Site Summary

'Standard' residential use with some areas reserved for public open space is proposed for the site which occupies 109 Ha (approx.). Jumping Creek residential estate to be located at the end of Lonergan Drive, Queanbeyan, NSW.

The Site lies in an enclosed valley within the Queanbeyan River corridor, with the Queanbeyan River to the west and high country to the east. The Site is highly undulating, and is dissected by Jumping Creek, ridgelines, gullies and associated drainage channels. The Site is bound by Queanbeyan River to the south west and low density residential allotments to the south west and west and by undeveloped land to the north, east and south. Jumping Creek flows to the Queanbeyan River immediately to the west of the Site which in turn flows to the Molonglo River, approximately 6km to the north of the Site.

Previous use of the Site dates back to the 1840s when the Site was first used for pastoral activities. Small scale mining activities are understood to have occurred on the Site between the 1850s and early 1900s. Based on the detailed site histories provided in previous investigation reports, potentially contaminating activities at the site include:

- Mining of lead, copper, zinc and possibly gold;
- Possible minerals processing activities;
- Limestone quarry and processing kiln; and
- Pastoral activities, including one sheep dip complex.

The site is currently used for a number of unauthorised activities, including trail bike riding, four wheel driving and bushwalking. It is understood that no particular authorized use has occurred on site since the 1960s.

Historical information and site inspection identified a number of potential Areas of Environmental Concern (AECs) associated with the above. These were:

- Mine Site 1;
- Mine Site 3;
- Mine Site 4;
- Former Minerals Processing Area;
- Former Kiln Area; and
- Former Sheep Dip Area.

Soils on the Site are skeletal silty sands and clayey soil with some gravel, underlain by hard sandy clay and gravelly clay, underlain by bedrock consisting of mainly highly to moderately weathered foliated tuff, siltstone or shale. Alluvial and slope wash deposits to a depth of up to 2m bgl are present within the gullies of Jumping Creek and its tributaries.

Previous assessments identified that 14 groundwater bores are located within 1km of the site boundary. All of the bores were identified for domestic use, which may include stock watering or irrigation.

Jumping Creek and its tributaries are ephemeral and were generally dry during investigations carried out by Coffey. It is considered unlikely that the watercourses on-site would have any utility for water supply or recreation. However it has been proposed that a constructed wetland may be installed on site as part of the development. Watercourses downstream (Queanbeyan and Molonglo Rivers) may have recreational utility.

13.2 Source Characterisation

This Stage 3 Contamination Assessment included supplementary assessment of soils, surface waters, sediments (in drainage channels) and groundwater. In accordance with an SAQP prepared for this project, sampling of soils was conducted across the AEC and remainder of the site, in order to:

- Provide confidence that there has been no anthropogenic impact to areas outside of the identified AECs – sampling strategy 1; and
- To confirm the extent of contamination within the AECs, where potentially contaminating activities were identified – sampling strategy 2.

The sheep dip area was not assessed as part of this investigation, however remediation and validation of the sheep dip area is to be conducted as per a Remediation Action Plan dated 15 December 2009 (Reference: ENVICANB00233AA-R02).

Sampling of sediments in site watercourses was carried out to assess the potential for offsite migration of identified contamination via sediment movement to the watercourse. Groundwater and surface water assessment was carried out to assess the potential for offsite migration of contamination via these vectors, and potential health and environmental risk.

The following is summarised from the assessment:

13.2.1 Contaminants of Concern

Based on this current and previous investigations, contaminants that have exceeded relevant guidelines and are considered to be the contaminants of concern for the site are as follows:

Soils and sediments: arsenic, cadmium, lead, copper, mercury and zinc. It is noted that mercury was detected only at the Mine Site 4 area;

Groundwater: arsenic, lead, zinc and copper;

Surface water: copper and zinc.

It is noted that OCPs were previously detected in low concentrations in samples from the sheep dip area, which were well below the adopted HIL-A criteria. In addition, OCPs were not detected in any other location on the site where OCPs were tested. However, OCPs are included as contaminants of potential concern for remediation and validation of this area.

The contaminants of the concern are non volatile, and would not be expected to migrate in soil gas. This would include mercury, which while at low levels in a localised area, would be expected to exist as a mineral salt.

13.2.2 Soils and Sediments: Source Areas

Following from this assessment, and the discussion provided in Section 12, the source areas for contamination in soils are considered to be:

Mine Site 3

Contamination in soils at Mine Site 3 was confirmed in skeletal surface soils, near surface soils and mine workings stockpiles in this area exceeding the HIL-A and EIL criteria. Contamination exceeding criteria were in the following ranges:

Arsenic: 20 mg/kg to 2900 mg/kg

Lead: 330 mg/kg to 5200 mg/kg

Cadmium: 11 mg/kg to 47 mg/kg

Contamination was identified over a wide area in natural mineral bearing rock and skeletal soils, as well as disturbed soils and stockpiled materials. The locations of the elevated results in this area are shown in Figure 5.

Mine Site 4

Contamination in soils at Mine Site 4 was confirmed in skeletal surface soils, near surface soils and mine workings stockpiles in this area exceeding the HIL-A and EIL criteria. Contamination exceeding criteria were in the following ranges:

Arsenic: 26 mg/kg to 200 mg/kg

Cadmium: 3.5 mg/kg to 350 mg/kg

Lead: 420 mg/kg to 54,000 mg/kg

Mercury: 2.2 mg/kg to 3.7 mg/kg

Copper: 120 mg/kg to 530 mg/kg

Zinc: 8900 mg/kg to 57,000 mg/kg

Like Mine Site 3, contamination was identified over a wide area in natural mineral bearing rock and skeletal soils, as well as disturbed soils and stockpiled materials. The locations of the elevated results in this area are shown in Figure 6.

Minerals Processing Area

Contamination in soils at the Minerals Processing Area was confirmed in skeletal surface soils and near surface soils in this area exceeding the HIL-A and EIL criteria. Contamination exceeding criteria were in the following ranges:

Arsenic: 20 mg/kg to 96 mg/kg

Lead: 300 mg/kg to 400 mg/kg

Zinc: 200 mg/kg to 8,100 mg/kg

The locations of the elevated results in this area are shown in Figure 7.

Outside of the above areas, arsenic was recorded in soils at 1 location (RE34) at 130 mg/kg, exceeding the HIL-A criteria for arsenic of 100 mg/kg. Subsequent sampling around this location did not confirm any 'hot spot' of contamination, and so this is not considered a source area for contamination in soils. In addition, marginally elevated metals concentrations were also recorded in soils at locations exceeding the EIL criteria at locations: RE18, MS1-7, SP1-SP3, OS20, DC2 and DC13. As discussed in this report, these are considered to be isolated results, not associated with any anthropogenic activities on the site, and adjacent to results that are not elevated. Further, these results are within the ranges considered to be representative of background concentrations, as discussed below. Therefore, they are not considered to be representative of significant source areas of contamination.

Results for sediment samples collected from watercourses returned results that were below the EIL criteria, except for DC2 and DC13, which only marginally exceeded the EIL criteria (zinc at 210 mg/kg and arsenic at 33 mg/kg respectively). These results indicate that migration of contamination at concentrations expected to cause an adverse environmental or human health impact via sediment transport in the watercourses has not occurred.

13.2.3 Soils: Background

ASTM E 1689-95 (2008) identifies background concentrations of an analyte as being attributable to natural occurrence at the site. However, this assessment has found that the majority of the source contamination is due to natural mineralisation on the site, due to elevated levels being associated with natural soils and rock. In this context, background levels may be considered to be those measured in all other areas of the site, apart from the source areas outlined above.

Statistical analysis of the results for each analyte for the samples outside of the main source areas of Mine Site 3 and Mine Site 4 has been carried out and is discussed in Section 12.1.7. The 95% UCL for each analyte (assuming normal distribution) was calculated as follows:

Arsenic: 12 mg/kg

Cadmium: 0.23 mg/kg

Lead: 34 mg/kg

Copper: 15 mg/kg

Zinc: 110 mg/kg

Mercury was detected only at the Mine Site 4 area, and was below the laboratory LOR in all background samples.

13.2.4 Surface waters

Surface water samples were collected from three locations which were safe to access and had standing surface water. Copper and zinc were detected in these samples at levels exceeding criteria for protection of aquatic ecosystems (freshwater trigger values for protection of 95% of species) adopted as investigation levels for the site. The following range in levels was recorded:

Copper: 0.001 to 0.005 mg/L

Zinc: 0.008 – 0.016 mg/L

13.2.5 Groundwater

Groundwater was assessed from 8 wells, located upgradient, downgradient and within, the AECs where soil concentrations had been detected above the adopted criteria (i.e. source areas). Copper, lead and zinc were detected in these samples at levels exceeding criteria for protection of aquatic ecosystems (freshwater trigger values for protection of 95% of species) adopted as investigation levels for the site. The following range in levels was recorded:

Copper: 0.001 to 0.003 mg/L

Lead: 0.001 to 0.2 mg/L

Zinc: 0.003 to 0.011 mg/L

13.3 Potential Migration Pathways

The following is identified with regard to potential migration pathways, for contamination from the identified source areas:

- Air, as a result of wind action and dust movement;
- Groundwater;
- Surface water;
- Sediment movement (erosion);
- Dermal contact or ingestion of soils;
- Food chain transfer.

13.4 Potential Receptors

The following potential human and environmental receptors are identified, considering the future planned use of the site as well as current surrounding land use:

- Site users, including residents and visitors;
- Site workers, involved in construction, services, landscaping or maintenance activities;

- On-site or offsite users of groundwater, including stock, or where groundwater may be used for growing fruit and/ or vegetables, which could be consumed by humans;
- Local plants, vertebrates and invertebrates;

13.5 Conceptual Site Model

Following from the above review, a pictorial presentation of the Site Conceptual Model is provided as Figure 10. The following discussion is provided:

- The soil contact pathway may be considered to be complete for either public open space or residential use of the source areas. These are Mine Site 3 and Mine Site 4, where concentrations of metals were recorded over a large area exceeding relevant health investigation levels.
- The sediment pathway is considered complete but is considered a low risk pathway, due to the low levels of contamination identified in drainage sediment samples considering the long period (50 – 100 years) that the mine sites have been in existence. The mine site areas are also generally stable, with low potential for erosion due to the nature of the materials and mature vegetation.
- The air pathway is considered not to be complete because the contaminants are non-volatile and that soils on the site are currently stable and not greatly available to wind erosion. This is indicated by the generally low levels of contamination outside of the identified source areas, suggesting minimal migration of contamination by this pathway (or other pathways). However, this pathway has the potential to become complete during future development or disturbance at the site.
- Some migration of dissolved contamination in surface water is evident, although at low levels. However, results obtained in this assessment are not considered to be representative of what may migrate to downstream watercourses as the samples were collected from stagnant pools, and not flowing surface water. Flowing surface water would be expected to contain much lower levels of contamination due to lower contact time with contaminated media as well as dilution effects, and therefore would present a low risk to the downstream environment. While the site watercourses are noted to be ephemeral, and not suited to recreational use (such as swimming), the results obtained for surface waters were well below guidelines for recreational water quality and aesthetics (ANZECC & ARMCANZ, 2000). Therefore, this pathway is considered to be potentially complete but does not represent a risk to human health for the proposed development.
- Food chain transfer of contamination to humans is possible should the source areas be used for growing edible produce. However, the thin skeletal soils and rock in the source areas are not suitable for this purpose, which would require the importation of clean soils to support healthy vegetation growth.
- Elevated levels of copper lead and zinc in groundwater both up-gradient and down-gradient of the source areas, as well as outside of the source areas (MW8) indicate that these are regional background levels, likely due to natural mineralisation within the local geology. However, the apparent increase in lead concentration from MW1 (up-gradient of Mine Site 3) to MW2 (within/ down-gradient of Mine Site 3) suggests that groundwater impact from the Mine Site 3 area due to leaching of lead cannot be discounted, although this is not suggested by the results obtained at Mine Site 4 where surface concentrations of lead are approximately 10 times those at Mine Site 3. Depth to groundwater is in excess of 19m, and is therefore unlikely to recharge surface water bodies, either on site or in the vicinity. Further, groundwater extraction and use on the proposed development is unlikely for any use, including drinking water, therefore no complete exposure pathway exists for site

users under the proposed development. However, a potentially complete exposure pathway exists via regional or down-gradient extraction and use of groundwater, considering the levels of copper lead and zinc contamination in groundwater across the site. While the assessment of risk associated with this exposure is outside the scope of this document, levels of these metals would be expected to dissipate due to dispersion with movement of groundwater down-gradient of the site, assuming no other offsite sources contributed to contamination. Therefore, risk for the most likely stock watering use down-gradient of the site is expected to be low with regard to relevant levels.

14 REMEDIATION AND MANAGEMENT OPTIONS

Based on the findings of the soil and groundwater assessment, and the analysis conducted in the CSM, the delineated Mine Site 3 and Mine Site 4 areas would require some form of management or remediation for proposed development. In addition, demolition and removal of potentially contaminated structures in the Minerals Processing Area (particularly the sumps and associated soils and sediments) as well as remediation of the Sheep Dip Area would also be required.

Excavation and offsite disposal of soils and rock containing elevated concentrations of metals in the Mine Site 3 and Mine Site 4 areas is not considered feasible, due to evidence suggesting that the elevated concentrations in these areas are due to natural mineralisation, and not historical anthropogenic processes which may have concentrated the contamination in localised areas. Therefore, attempts to excavate materials in these areas are likely to only expose underlying mineralised rock, and would be unsuccessful. Further, contamination concentrations were detected in samples collected at Mine Site 3 and Mine Site 4 at concentrations exceeding either the General Solid Waste classification or the Restricted Solid Waste classification as per the NSW DECC (2008) Waste Classification Guidelines Part 1: Classifying Waste. Costs associated with the transport and disposal of large volumes of such materials would be prohibitive to the proposed development, due to the distance of the site from a waste facility licensed to accept such materials.

Following from the above, Mine Site 3 and Mine Site 4 areas may not be suitable for standard residential use, due to the significantly elevated metals concentrations in soil and rock in these areas. Further, capping of soils, with an appropriate management plan, is generally considered unsuitable for residential areas. Therefore, it would be prudent to avoid residential development of these areas, or alternatively conduct a site specific health risk assessment to confirm the risk for residential development of these areas.

Management and remediation options for the Mine Site 3 and Mine Site 4 areas would include:

1. Revision of the development plan for the site so that residential allotments are not within the Mine Site 3 and Mine Site 4 areas, including a suitable buffer zone;
2. Restriction of access to the Mine Site 3 and Mine Site 4 areas in the short term to avoid unhealthy exposures to metals concentrations in these areas, as well as unsafe conditions associated with mine shafts, adits and other structures;
3. The removal or management of physical hazards (such as mine shafts or other structures) associated with these areas;
4. Removal and landfill disposal of stockpiles of rock and soils and other loose potentially contaminated materials in these areas. Alternatively, these materials may also be consolidated and capped on site in accordance with a Remediation Action Plan (RAP), which should also contain procedures for environmental management of the remedial works; and
5. Implementation of a landscape cap and vegetation in Mine Site 3 and Mine Site 4, so that these areas may be incorporated into the development as open space areas with adequate stabilisation and barrier to direct contact with rock and soils.

It is recommended that these portions of the site are remediated under a RAP, with ongoing management under a Site Environmental Management Plan (SEMP). Additionally, contamination associated with the sumps identified at the Minerals Processing Area is recommended to be removed to offsite licensed landfill (or capped on site), along with the demolition of these structures.

Assessment and remediation of the Sheep Dip Area is to be completed as part of the validation works to be conducted as per the Remediation Action Plan dated (reference ENVICANB00233AA-R02).

15 CONCLUSIONS AND RECOMMENDATIONS

15.1 Conclusions

Inspections carried out as part of this assessment provided observations regarding site condition and location of evidence of former land uses. The following was concluded from the observations:

- No evidence of plant stress was observed;
- No odours associated with contamination were observed;
- General waste resulting from unauthorised fly tipping was observed across the site in small volumes.
- Following removal of weeds where practicable and further site walkovers conducted by Coffey in 2009, no further AECs were observed across the site, with the exception of a previously unidentified mine shaft at Mine Site 4. Following from this, the following AEC's were confirmed in this assessment:
    - Mine Site 1 (within DOI 3);
    - Mine Site 3 (within DOI 1);
    - Mine Site 4 (within DOI 2);
    - Former Minerals Processing Area (within DOI 2);
    - Former Kiln (within DOI 3); and
    - Former Sheep Dip (within DOI 4).
- Mine sites were generally observed to consist of a mine shaft and waste rock/soil stockpile/s. Mine Site 4 also had an adit, open cut mine area and an adjacent clay quarry.
- The mineral processing area and sheep dip area were observed to generally consist of remnant infrastructure.
- A remnant kiln constructed from Bricks was observed at the kiln area.

In accordance with the SAQP prepared for this project, sampling of soils was conducted across each of the Domains of Interest in order to:

1. Provide confidence that there has been no anthropogenic impact to areas outside of the identified AECs - Sampling Strategy 1; and
2. To confirm the lateral and vertical extent of contamination within the AEC areas, where potentially contaminating activities were identified – Sampling Strategy 2.

Following implementation of sampling and analysis of soils in accordance with these strategies, it was concluded that:

1. The primary source of elevated metals concentrations on the site has been confirmed to be due to natural mineralisation within local geological formations. Based on analytical results from samples of rock fragments and samples from weathered rock surface samples, which were collected from up gradient locations of the mine sites, mining activities are considered to

in general not have concentrated the contamination in the identified AEC areas. As such, the mine sites are considered to be identifiers of areas where natural mineralisation is present within the local geology. However, disturbance of the AEC areas is evident, and so the distribution of elevated metals concentrations cannot be concluded to be completely natural.

2. An area of elevated metals concentrations exists within soil and rock at the Mine Site 3 area, which has been adequately delineated in this assessment. Metals concentrations exceeded the adopted HIL-A criteria for arsenic, cadmium and lead, and the EIL criteria for copper and zinc.

3. An area of elevated metals concentrations exists within soil and rock at the Mine Site 4 area, which has been adequately delineated in this assessment. Metals concentrations exceeded the adopted HIL-A criteria for cadmium, lead and zinc, and the EIL criteria for arsenic and copper.

4. Coffey considers that the Mine Site 3 and Mine Site 4 areas may not be suitable for standard residential use, due to the significantly elevated metals concentrations in soil and rock in these areas, the difficulty and cost of removing soil and rock containing elevated metals concentrations from the site, and evidence suggesting that the concentrations are due to natural mineralisation of the area. Further, capping of soils, with an appropriate management plan, is generally considered unsuitable for residential areas. Therefore, it would be prudent to avoid residential development of these areas, or alternatively conduct a site specific health risk assessment to confirm the risk for residential development of these areas.

5. Inspection of the Minerals Processing Area identified remnant infrastructure including wooden posts and concrete slab as well as 2 sumps. It is concluded that metals concentrations in the Minerals Processing Area meet the adopted HIL-A and EIL criteria on a statistical basis. However, metals concentrations exceeding the EIL (arsenic, cadmium and zinc) and HIL-A criteria (zinc only) was identified associated with 2 sump structures, and it is recommended that this contamination is removed to offsite landfill (or otherwise managed on site) with the demolition of these structures.

6. Samples collected from within the drainage channels of Jumping Creek and its tributaries returned metal concentrations generally above the laboratory LOR but below the adopted EIL and HIL A criteria, the drainage channel results indicate that significant migration of contaminants via sediment transport in the watercourse has not occurred.

7. Based on the sampling and analytical results, Coffey conclude that DOI 3 and DOI 5 are suitable for the proposed development with no further assessment or remedial works required. It is noted that the Sheep Dip Area was not assessed as part of this investigation. DOI 4 is also considered suitable for the proposed development providing remedial works are carried out on the Sheep Dip Area as per the RAP (reference ENVICANB00233AA-R02).

8. All other assessed areas of the site, outside of the delineated Mine Site 3 and Mine Site 4 areas, and the sumps in the Mineral processing Area, are suitable for either:

    - Residential with gardens and accessible soils – corresponding with HIL-A land use scenario; or

    - Parks, recreational open space, playing fields including secondary schools – corresponding to the HIL-E land use scenario.

Groundwater across the site was identified to have elevated concentrations of copper, lead and zinc. Samples collected from wells located up gradient of AECs also displayed high metal concentrations exceeding the adopted criteria and generally within a similar range to concentrations detected in down gradient wells. An exception to this was lead detected in MW2 (down gradient of Mine Site 1), which was approximately 1 order of magnitude higher than the up gradient well. Lead concentrations in both wells exceeded the adopted criteria and it is likely that the increase in lead concentrations in the down gradient well is due to the presence of natural mineralisation in the local geology and not due to mining activities in the area. Coffey therefore concludes that the groundwater across the site has elevated metal concentrations exceeding the adopted criteria. Based on the soil analytical results and results from water samples collected up gradient of AECs, Coffey concludes that the elevated concentrations of metals in groundwater are likely due to natural mineralisation and not due to historical mining activities. However, impact to groundwater from the source areas on site cannot be excluded, although groundwater quality up-gradient of the site source areas also suggest that these metals are elevated in groundwater on a regional basis, likely due to natural mineralisation.

Evaluation of the Conceptual Site Model suggests that risk of exposure of site users to elevated metals levels in groundwater is low, considering the depth to groundwater under the site, and the low likelihood of groundwater extraction and use on the site. However, a potentially complete exposure pathway exists to groundwater contamination for offsite users of groundwater, via groundwater extraction. Assuming the source areas are contributing to groundwater metals impact, levels of these metals would be expected to dissipate due to dilution down-gradient of the site. Therefore, risk for the most likely stock watering use down-gradient of the site is expected to be low with regard to relevant levels. Further, metals levels in groundwater would be unaffected by the proposed site development, given the evidence presented in this report that mineralisation in the local geology is the likely primary source of metals in groundwater.

OCPs and OPPs were also not detected in soil samples collected across the site. Groundwater samples returned OCP and OPP concentrations below the laboratory LOR. The laboratories did not report to ANZECC guidelines, however due to the depth of groundwater across the site, OCP and OPPs affinity to bind to soil and the time period (minimum of 50 years) since any potentially contaminating activities involving these contaminants of concern has occurred, the risk of OCPs and/or OPPs to be present in the groundwater at concentrations lower than the laboratory LOR are considered to be low.

Coffey considers that the metals concentrations in surface water do not represent a risk to human health for the proposed site development, due to evidence suggesting that these concentrations are due to regional mineralisation, and also being well below guidelines for recreational water quality and aesthetics published in ANZECC & ARMCANZ 2000.

Generally concentrations of metals in surface water samples, and considering low concentrations in sediment samples collected from the waterways, indicate that surface water flow are not a major transport route for metals at the site.

15.2 Recommendations

The following recommendations are made from this assessment:

1. It would be prudent to avoid residential development of these areas by revising the development plan for the site, or alternatively conduct a site specific health risk assessment to confirm the risk for residential development of these areas.

2. Restriction of access to the Mine Site 3 and Mine Site 4 areas in the short term to avoid unhealthy exposures to metals concentrations in these areas, as well as unsafe conditions associated with mine shafts, adits and other structures;
3. The removal or management of physical hazards (such as mine shafts or other structures) associated with these areas. However, it is noted that the identification and management of physical hazards on the site were outside the scope of this assessment;
4. Removal and landfill disposal (or on-site management) of stockpiles of rock and soils and other loose potentially contaminated materials in the Mine Site areas; and
5. Implementation of a landscape cap and vegetation in Mine Site 3 and Mine Site 4, so that these areas may be incorporated into the development as open space areas with adequate stabilisation and barrier to direct contact with rock and soils.

It is recommended that these portions of the site are remediated under a RAP and managed under a Site Environmental Management Plan (SEMP). The RAP should include environmental management procedures to manage potential migration or exposure of contamination during remedial works.

Assessment and remediation of the Sheep Dip Area is to be completed as part of the validation works to be conducted as per the Remediation Action Plan dated (reference ENVICANB00233AA-R02).

16 REFERENCES

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NSW EPA (1998), Guidelines for the NSW Site Auditor Scheme, ISBNo0-7313 0177 3;

NEPC 1999b, National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B(6) Guideline on Risk Based Assessment of Groundwater Contamination;

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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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Important information about your **Coffey** Environmental Report

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.

Tables

Stage 3 Contamination Assessment, Jumping Creek Queanbeyan, NSW

Table LR1 - DOI 1
Analytical Soil Results
Jumping Creek - Queanbeyan
ENVICANB00233AA

					Sample # and Depth	MS3-1_0.0-0.2	MS3-2_0.0-0.2	MS3-3_0.0-0.2	MS3-3_0.5-0.6	MS3-4_0.0-0.2	MS3-5_0.0-0.2	MS3-6_0.0-0.2	MS3-7_0.0-0.2	MS3-8_0.0-0.2
					Sampled_Date-Time	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
					Area	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***									
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	***1700***	***1600***	**50**	**47**	***120***	***1800***	***1900***	***1500***	***2900***
	Cadmium	mg/kg	0.3	**3**	*20*	**12**	**11**	1.6	1.4	2.1	**13**	**13**	***23***	***47***
	Chromium (III+VI)	mg/kg	0.3			21	21	22	21	25	22	23	6.7	8.1
	Copper	mg/kg	0.5	**100**	*1000*	**110**	92	34	38	42	92	**100**	**100**	**260**
	Lead	mg/kg	1	**600***	*300*	***1600***	***1300***	230	220	*330*	***1700***	***1700***	***1200***	***5200***
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	0.13	0.09	<0.05	<0.05	<0.05	0.09	0.11	0.12	0.11
	Nickel	mg/kg	0.5	**60**	*600*	18	18	20	19	21	19	20	6.1	7.4
	Zinc	mg/kg	0.5	**200**	*7000*	**2200**	**2100**	**420**	**370**	**470**	**2300**	**2300**	**3500**	**4500**
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-

Notes:
* Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Table LR1 - DOI 1
Analytical Soil Results
Jumping Creek - Queanbeyan
ENVICANB00233AA

					Sample # and Depth	MS3-9_0.0-0.2	MS3-10_0.0-0.2	MS3-11_0.0-0.2	MS3-12_0.0-0.2	MS3-13_0.0-0.2	MS3-13_0.5-0.6	MS3-14_0.0-0.2	MS3-15_0.0-0.2	MS3-15_0.5-0.6
					Sampled_Date-Time	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
					Area	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***									
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	***110***	***100***	***100***	***140***	***130***	***110***	***130***	***110***	**82**
	Cadmium	mg/kg	0.3	**3**	*20*	2.1	2	0.7	1.1	0.9	0.9	0.95	1.9	1.6
	Chromium (III+VI)	mg/kg	0.3			24	24	13	20	18	13	17	24	24
	Copper	mg/kg	0.5	**100**	*1000*	40	41	33	42	42	38	42	39	36
	Lead	mg/kg	1	**600***	*300*	280	290	280	*350*	*340*	*340*	*380*	290	220
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	0.05	0.06	0.07	0.06	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	21	21	14	19	17	17	18	21	20
	Zinc	mg/kg	0.5	**200**	*7000*	**450**	**450**	**330**	**450**	**410**	**390**	**410**	**450**	**370**
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-

Notes:
* Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Table LR1 - DOI 1
Analytical Soil Results
Jumping Creek - Queanbeyan
ENVICANB00233AA

					Sample # and Depth	MS3-16_0.0-0.2	MS3-18_0.0-0.2	MS3-21_0.0-0.2	MS3-23_0.0-0.2	MS3-25_0.0-0.2	MS3-27_0.0-0.2	MS3-28_0.0-0.2	MS3-30_0.0-0.2	MS3-32_0.0-0.2
					Sampled_Date-Time	25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
					Area	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3	Mine Site 3
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***									
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	**32**	**40**	**39**	**27**	**23**	**22**	**27**	**28**	**30**
	Cadmium	mg/kg	0.3	**3**	*20*	0.3	0.4	0.4	<0.3	<0.3	<0.3	<0.3	0.3	1.1
	Chromium (III+VI)	mg/kg	0.3			16	18	18	17	16	16	19	18	18
	Copper	mg/kg	0.5	**100**	*1000*	26	28	28	22	21	19	23	23	28
	Lead	mg/kg	1	**600***	*300*	100	120	120	72	75	60	75	88	160
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	12	15	14	16	15	14	17	17	16
	Zinc	mg/kg	0.5	**200**	*7000*	100	120	120	110	100	100	120	110	**290**
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-

Notes:
* Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Canberra Investment Coorporation

Table LR1 - DOI 1
Analytical Soil Results
Jumping Creek - Queanbeyan
ENVICANB00233AA

					Sample # and Depth	MS3-34_0.0-0.2	MS3-35_0.0-0.2	MS3SP1	MS3SP3	RE34_0.0-0.2	RE36_0.0-0.2	RE37_0.0-0.2	RE38_0.0-0.2	RE39_0.0-0.2	RE40_0.0-0.2	DC12-a	DC12-b	DC12-c	DC12-d	RE34-a	RE34-b	RE34-c	RE34-d
					Sampled_Date-Time	25/11/2009	25/11/2009	13/08/2009	13/08/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010
					Area	Mine Site 3	Mine Site 3	Stockpile	Stockpile	Residential	Residential	Residential	Residential	Residential	Residential	DO1	DO2	DO3	DO4	DO9	DO10	DO11	DO12
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***																		
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	**29**	**35**	**26**	***120***	***130***	5	8	<3	<3	10	3	3	3	3	7	6	8	7
	Cadmium	mg/kg	0.3	**3**	*20*	0.8	1	0.9	2.4	0.5	0.4	<0.3	<0.3	<0.3	0.6	<0.3	<0.3	<0.3	<0.3	0.4	0.4	0.5	0.5
	Chromium (III+VI)	mg/kg	0.3			18	19	1.7	2.5	20	27	28	19	26	23	13	12	11	14	21	20	21	20
	Copper	mg/kg	0.5	**100**	*1000*	30	33	1.6	11	40	7.6	4.4	1	5.7	6.4	10	9.4	7	10	14	16	22	15
	Lead	mg/kg	1	**600***	*300*	150	190	180	110	85	10	7	3	4	11	9.7	10	11	9.9	10	10	9.1	18
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	15	16	1.3	2	32	13	13	10	21	12	11	9.8	7.7	11	21	21	22	19
	Zinc	mg/kg	0.5	**200**	*7000*	**250**	**300**	170	**450**	140	43	34	22	28	69	47	47	39	47	47	40	36	58
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	<0.3	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-

Notes:
* Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Sample # and Depth	MP1_0.0-0.2	MP1_0.5-0.6	MP2_0.0-0.2	MP2_0.5-0.6	MP3_0.0-0.2	MP3_0.5-0.6	MP4_0.0-0.2	MP4_0.5-0.6	MP5_0.0-0.2	MP5_0.5-0.6	MP6_0.0-0.2	MP6_0.5-0.6	MP7_0.0-0.2	MP7_0.5-0.6
					Sampled_Date-Time	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
					Area	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***														
Cyanide	Cyanide Total	mg/kg	0.1		*500*	0.2	-	0.1	-	-	-	0.1	-	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	12	11	13	11	10	10	**20**	15	**20**	**21**	**22**	18	7	7
	Cadmium	mg/kg	0.3	**3**	*20*	0.5	0.3	0.6	0.4	0.4	0.3	0.6	0.4	0.6	0.6	1.1	0.8	<0.3	<0.3
	Chromium (III+VI)	mg/kg	0.3			26	27	24	26	22	22	28	28	30	31	26	35	24	24
	Copper	mg/kg	0.5	**100**	*1000*	14	14	13	13	17	17	28	22	26	26	17	11	4.5	4.3
	Lead	mg/kg	1	**600***	*300*	120	89	120	95	110	97	190	160	230	200	*310*	210	39	41
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	14	12	13	13	16	16	18	18	25	25	19	26	11	9.9
	Zinc	mg/kg	0.5	**200**	*7000*	160	110	180	130	**320**	**230**	**300**	**240**	**350**	**350**	**500**	**480**	80	70
Moisture	Moisture	%	1			13	12	13	12	15	14	12	10	16	18	15	12	12	12
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			<0.1	-	<0.1	-	-	-	<0.1	-	-	-	-	-	-	-
	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		*10*	<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	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			<0.1	-	<0.1	-	-	-	<0.1	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			<0.1	-	<0.1	-	-	-	<0.1	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	<0.2	-	<0.2	-	-	-	<0.2	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	<0.3	-	<0.3	-	-	-	<0.3	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Canberra Investment Coorportation

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Sample # and Depth	MP8_0.0-0.2	MP8_0.5-0.6	MP9_0.0-0.2	MP9_0.5-0.6	MP10_0.0-0.2	MP10_0.5-0.6	MP11_0.0-0.2	MP11_0.5-0.6	MP12_0.0-0.2	MP12_0.5-0.6	MP13_0.0-0.2	MP13_0.5-0.6	MP14_0.0-0.2
					Sampled_Date-Time	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009	5/08/2009
					Area	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	<0.1	-	0.2	-	0.2	-	-	-	0.2	-	0.5
Inorganics	pH (Field)	pH_Units	0			-	-	-	-	-	-	-	-	-	-	-	-	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	10	11	**26**	**37**	**28**	**28**	**40**	**35**	**21**	**20**	**21**	**22**	**33**
	Cadmium	mg/kg	0.3	**3**	*20*	0.3	0.4	0.5	0.7	0.6	0.5	0.7	0.5	0.5	0.5	0.4	0.4	2.2
	Chromium (III+VI)	mg/kg	0.3			21	22	27	34	27	28	30	25	25	23	26	27	25
	Copper	mg/kg	0.5	**100**	*1000*	9.7	10	26	32	24	25	29	23	19	20	19	20	22
	Lead	mg/kg	1	**600***	*300*	140	150	140	170	130	120	190	110	97	94	99	100	*300*
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	11	11	23	24	20	21	23	24	22	19	19	20	20
	Zinc	mg/kg	0.5	**200**	*7000*	**210**	**220**	**220**	**330**	**250**	**260**	**330**	**200**	**210**	**200**	**200**	190	**610**
Moisture	Moisture	%	1			9	9	11	11	13	12	11	9	12	14	9	9	10
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1
	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		*10*	-	-	<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
	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
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	<0.2	-	<0.2	-	<0.2	-	-	-	<0.2	-	<0.2
	DDT+DDE+DDD	mg/kg			*200*	-	-	<0.3	-	<0.3	-	<0.3	-	-	-	<0.3	-	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Sample # and Depth	MP14_0.5-0.6	MP15_0.0-0.2	MP15_0.5-0.6	MP16_0.0-0.2	MP16_0.5-0.6	MPSUMP-1	MPSUMP-2	MS4-1_0.0-0.2	MS4-1_0.5-0.6	MS4-19_0.0-0.2	MS4-2_0.0-0.2	MS4-3_0.0-0.2	MS4-3_0.5-0.6
					Sampled_Date-Time	5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
					Area	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mineral P.	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	-	-	-	0.6	1.4	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			-	-	-	-	-	-	-	7.1	-	-	-	-	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	**30**	**45**	**41**	17	18	**96**	**45**	6	6	10	6	4	5
	Cadmium	mg/kg	0.3	**3**	*20*	2.3	2.1	2.1	0.94	1.3	1.8	**9.6**	0.3	<0.3	0.6	0.4	<0.3	0.3
	Chromium (III+VI)	mg/kg	0.3			25	27	25	25	25	58	19	21	25	19	22	17	20
	Copper	mg/kg	0.5	**100**	*1000*	21	25	23	14	15	87	91	11	13	13	12	10	13
	Lead	mg/kg	1	**600***	*300*	*320*	*400*	*360*	*310*	*330*	220	240	63	41	44	65	45	48
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	19	22	20	14	16	19	22	16	16	17	19	12	15
	Zinc	mg/kg	0.5	**200**	*7000*	**620**	**720**	**660**	**370**	**420**	**1800**	***8100***	130	76	**220**	140	96	110
Moisture	Moisture	%	1			10	14	15	12	13	56	85	16	12	2	14	9	10
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-
	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		*10*	-	-	-	-	-	<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	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	<0.2	<0.2	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	<0.3	<0.3	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Coffey Environments
Specialists in living and working places

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

Canberra Investment Coorportation

					Sample # and Depth	MS4-4_0.0-0.2	MS4-4_0.5-0.6	MS4-5_0.0-0.2	MS4-5_0.5-0.6	MS4-6_0.0-0.2	MS4-6_0.5-0.6	MS4-7_0.0-0.2	MS4-8_0.0-0.2	MS4-9_0.0-0.2	MS4-10_0.0-0.2	MS4-11_0.0-0.2	MS4-11_0.5-0.6	MS4-12_0.0-0.2
					Sampled_Date-Time	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
					Area	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			7.3	-	-	-	-	-	7.9	-	-	-	7.6	-	7.1
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	5	5	7	7	9	8	**26**	**26**	**33**	8	9	6	8
	Cadmium	mg/kg	0.3	**3**	*20*	0.5	0.5	0.4	0.4	0.5	0.4	**7.4**	**7.6**	**7.2**	0.4	0.4	<0.3	0.5
	Chromium (III+VI)	mg/kg	0.3			20	21	20	19	24	22	18	18	21	24	22	18	21
	Copper	mg/kg	0.5	**100**	*1000*	14	14	15	16	15	15	**120**	**130**	52	16	16	15	17
	Lead	mg/kg	1	**600***	*300*	47	45	58	53	85	74	***6300***	***7400***	***1300***	130	69	43	*490*
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.54	0.63	0.18	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	14	16	20	21	22	21	19	17	20	21	21	16	15
	Zinc	mg/kg	0.5	**200**	*7000*	120	110	180	160	190	170	***11000***	***8900***	**2400**	**200**	170	130	**410**
Moisture	Moisture	%	1			12	12	16	17	9.9	11	7	8	9	14	16	10	12
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Sample # and Depth	MS4-12_0.5-0.6	MS4-13_0.0-0.2	MS4-13_0.5-0.6	MS4-14_0.0-0.2	MS4-15_0.0-0.2	MS4-16_0.0-0.2	MS4-17_0.0-0.2	MS4-18_0.0-0.2	MS4-18_0.5-0.6	MS4-2_0.5-0.6	MS4-20_0.0-0.2	MS4-21_0.0-0.2	MS4-22_0.0-0.2
					Sampled_Date-Time	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
					Area	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			-	-	-	7.2	-	-	-	7.2	-	-	-	7.6	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	8	8	8	**55**	13	9	8	8	10	9	9	10	**20**
	Cadmium	mg/kg	0.3	**3**	*20*	0.4	0.4	0.4	***48***	**3.5**	0.5	0.6	1.9	0.97	<0.3	0.5	0.6	1.8
	Chromium (III+VI)	mg/kg	0.3			24	19	20	12	18	20	19	22	32	27	20	20	20
	Copper	mg/kg	0.5	**100**	*1000*	17	15	15	**130**	28	12	11	18	22	15	14	13	39
	Lead	mg/kg	1	**600***	*300*	*390*	*440*	*420*	***14000***	***1100***	38	35	*370*	160	29	39	48	***1300***
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	0.67	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.27
	Nickel	mg/kg	0.5	**60**	*600*	18	14	15	10	14	18	17	20	24	18	18	18	15
	Zinc	mg/kg	0.5	**200**	*7000*	**360**	**410**	**410**	***20000***	**1200**	**210**	**210**	**770**	**700**	53	170	**220**	**1000**
Moisture	Moisture	%	1			9	14	13	3	15	4	3	16	19	11	4	4	9
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Canberra Investment Coorportation

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

Method_Type	ChemName	Units	EQL	NEPM 1999 EIL	NEPM 1999 HIL A	MS4-23_0.0-0.2	MS4-24_0.0-0.2	MS4-24_0.5-0.6	MS4-25_0.0-0.2	MS4-25_0.5-0.6	MS4-26_0.0-0.2	MS4-26A_0.0-0.2	MS4-26A_0.5-0.6	MS4-27_0.0-0.2	MS4-28_0.0-0.2	MS4-29_0.0-0.2	MS4-30_0.0-0.2	MS4-30_0.5-0.6
	Sampled_Date-Time					6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009	7/08/2009	7/08/2009	7/08/2009
	Area					Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			-	-	-	-	-	-	8.9	-	-	-	-	6.4	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	**23**	12	9	9	10	6	5	18	**80**	17	9	9	7
	Cadmium	mg/kg	0.3	**3**	*20*	**4.2**	2.8	1.1	0.5	1.1	0.4	0.5	***240***	**11**	0.4	0.6	0.6	0.5
	Chromium (III+VI)	mg/kg	0.3			14	20	34	22	22	20	2.2	11	11	25	19	19	22
	Copper	mg/kg	0.5	**100**	*1000*	**120**	27	26	20	19	10	4.1	52	**530**	12	13	12	8.9
	Lead	mg/kg	1	**600***	*300*	***5100***	***1300***	200	*510*	***650***	*350*	15	***1400***	***46000***	39	120	130	94
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	0.85	0.12	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	**3.7**	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	11	14	24	15	15	16	2	13	7.1	20	12	12	13
	Zinc	mg/kg	0.5	**200**	*7000*	**2400**	**1100**	**810**	**490**	**640**	**220**	180	***57000***	***10000***	83	**280**	**230**	190
Moisture	Moisture	%	1			9	14	17	14	12	11	28	15	13	8	14	14	12
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

Canberra Investment Coorportation

					Sample # and Depth	MS4-31_0.0-0.2	MS4-32_0.0-0.2	MS4-33_0.0-0.2	MS4-33_0.5-0.6	MS4-34_0.0-0.2	MS4-34_0.5-0.6	MS4-35_0.0-0.2	MS4-36_0.0-0.2	MS4-37_0.0-0.2	MS4-38_0.0-0.2	MS4-39_0.0-0.2	MS4-41_0.0-0.2	MS4-43_0.0-0.2
					Sampled_Date-Time	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	25/11/2009	25/11/2009
					Area	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4
Method_Type	ChemName	Units	EQL	NEPM 1999 EIL	*NEPM 1999 HIL A*													
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			-	-	-	-	6.6	-	-	-	-	-	-	-	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	8	6	4	6	5	5	7	6	**44**	**51**	**46**	6	8
	Cadmium	mg/kg	0.3	**3**	*20*	0.5	0.3	0.4	0.3	0.5	0.3	0.3	<0.3	2.7	2.4	2.3	1.1	<0.3
	Chromium (III+VI)	mg/kg	0.3			20	14	16	16	18	16	15	14	17	16	18	15	17
	Copper	mg/kg	0.5	**100**	*1000*	12	16	9	11	10	9.6	15	11	**350**	**340**	**340**	7.7	5.7
	Lead	mg/kg	1	**600***	*300*	110	110	86	190	86	130	110	26	***33000***	***25000***	***23000***	71	23
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**3.2**	**2.2**	**2.5**	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	13	12	12	12	13	10	13	18	8.7	7.4	8.6	12	14
	Zinc	mg/kg	0.5	**200**	*7000*	**200**	110	130	120	140	120	130	51	**2400**	**2200**	**2200**	**1200**	65
Moisture	Moisture	%	1			13	8	11	10	13	9	8	7	7	7	9	2	2
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Canberra Investment Coorportation

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Sample # and Depth	MS4-45_0.0-0.2	MS4-47_0.0-0.2	MS4-49_0.0-0.2	MS4-51_0.0-0.2	MS4SP1	MS4SP3	MS4SP5	MS4SP7	MS4SP9	OS13_0.0-0.2	OS14_0.0-0.2	OS15_0.0-0.2	OS16_0.0-0.2
					Sampled_Date-Time	25/11/2009	25/11/2009	25/11/2009	25/11/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
					Area	Mine Site 4	Mine Site 4	Mine Site 4	Mine Site 4	Stockpile	Stockpile	Stockpile	Stockpile	Stockpile	Open Space	Open Space	Open Space	Open Space
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			-	-	-	-	-	-	-	-	-	-	-	-	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	8	4	9	5	***200***	8	8	6	15	11	<3	3	6
	Cadmium	mg/kg	0.3	**3**	*20*	1.3	<0.3	<0.3	<0.3	***350***	2.6	**4.9**	0.4	0.95	0.3	<0.3	<0.3	<0.3
	Chromium (III+VI)	mg/kg	0.3			17	14	16	14	5.4	9.7	3.8	2	3.2	20	15	14	17
	Copper	mg/kg	0.5	**100**	*1000*	9.6	5.3	6.9	4.9	**360**	18	**190**	96	**190**	8.2	8.6	7.5	14
	Lead	mg/kg	1	**600***	*300*	67	18	23	20	***19000***	120	***35000***	***14000***	***54000***	16	10	9	20
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	**3.2**	0.16	**6**	0.65	**8.5**	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	14	10	14	10	6.8	11	1.5	0.7	1.3	23	11	10	14
	Zinc	mg/kg	0.5	**200**	*7000*	**1500**	53	69	48	***130000***	**710**	**810**	**360**	**840**	64	24	19	65
Moisture	Moisture	%	1			1	<1	1	1	-	-	-	-	-	8	13	19	13
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1
	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		*10*	-	-	-	-	-	-	-	-	-	-	-	<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
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-	-	-	<0.3	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	<1	<1
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	<1	<1
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

Table LR2 - DOI 2
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

Canberra Investment Coorportation

					Sample # and Depth	OS17_0.0-0.2	OS18_0.0-0.2	OS19_0.0-0.2	OS20_0.0-0.2	OS20-a	OS20-b	OS20-c	OS20-d	RE24_0.0-0.2	RE30_0.0-0.2	RE31_0.0-0.2	RE32_0.0-0.2	RE33_0.0-0.2	RE35_0.0-0.2	SP1	SP2	SP3	SP4
					Sampled_Date-Time	24/07/2009	24/07/2009	24/07/2009	24/07/2009	28/04/2010	28/04/2010	28/04/2010	28/04/2010	24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009
					Area	Open Space	Open Space	Open Space	Open Space	Open Space	Open Space	Open Space	Open Space	Resiodential	Resiodential	Resiodential	Resiodential	Resiodential	Resiodential	Clay SP	Clay SP	Clay SP	Clay SP
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***																		
Cyanide	Cyanide Total	mg/kg	0.1		*500*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganics	pH (Field)	pH_Units	0			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	3	4	<3	**23**	5	6	4	4	3	11	5	7	5	<3	17	11	12	12
	Cadmium	mg/kg	0.3	**3**	*20*	<0.3	<0.3	<0.3	<0.3	0.3	0.3	<0.3	<0.3	<0.3	0.5	0.4	<0.3	<0.3	<0.3	0.7	0.7	0.6	0.6
	Chromium (III+VI)	mg/kg	0.3			14	12	13	15	14	17	14	13	17	16	18	14	16	16	21	21	19	22
	Copper	mg/kg	0.5	**100**	*1000*	9.3	9.4	12	12	13	17	14	15	3.6	12	10	11	11	11	23	17	18	17
	Lead	mg/kg	1	**600***	*300*	13	8	9.5	15	15	17	14	13	25	99	36	24	21	12	90	62	60	60
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	12	17	13	19	19	20	16	17	4.3	11	14	15	12	11	31	25	23	24
	Zinc	mg/kg	0.5	**200**	*7000*	21	20	22	48	68	79	60	69	31	160	70	60	61	38	**450**	**200**	**210**	180
Moisture	Moisture	%	1			15	10	7	13	8	14	9	12	7	10	14	9	12	7	11	6	5	4
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
	4,4-DDE	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	Aldrin	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	cis-Chlordane	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	DDD	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	Dieldrin	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	Endosulfan II	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	Endrin	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	Endrin ketone	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	Heptachlor	mg/kg	0.1		*10*	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	-	-	-	<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	<0.1	<0.1	<0.1
	Hexachlorobenzene	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	o,p'-DDD	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
	trans-chlordane	mg/kg	0.1			-	-	<0.1	-	-	-	-	-	<0.1	<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	<0.1	<0.1	<0.1
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2
	DDT+DDE+DDD	mg/kg			*200*	-	-	<0.3	-	-	-	-	-	<0.3	<0.3	-	-	-	<0.3	<0.3	<0.3	<0.3	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	<0.5	-	-	-	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	<1	-	-	-	-	-	<1	<1	-	-	-	<1	-	-	-	-
	Dimethoate	mg/kg	1			-	-	<1	-	-	-	-	-	<1	<1	-	-	-	<1	-	-	-	-
	Ethion	mg/kg	0.2			-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	-
	Malathion	mg/kg	0.2			-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	<0.5	-	-	-	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	-
	Parathion	mg/kg	0.2			-	-	<0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Table LR3 - DOI 3
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

Canberra Investment Coorporation

					Field_ID	OS05_0.0-0.2	OS07_0.0-0.2	OS08_0.0-0.2	OS10_0.0-0.2	RE02_0.0-0.2	RE05_0.0-0.2	RE06_0.0-0.2	RE10_0.0-0.2	RE13_0.0-0.2	RE14_0.0-0.2	RE14_0.5-0.6	RE15_0.0-0.2
					Sampled_Date-Time	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009
					SampleComments	Open Space	Open Space	Open Space	Open Space	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***												
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	5	<3	<3	6	6	6	8	5	7	6	7	8
	Cadmium	mg/kg	0.3	**3**	*20*	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	Chromium (III+VI)	mg/kg	0.3			9.6	17	18	15	16	19	18	15	19	18	19	18
	Copper	mg/kg	0.5	**100**	*1000*	12	11	11	8.8	29	19	15	5.5	21	16	18	38
	Lead	mg/kg	1	**0***	*300*	6	4	5	5	6	8	7	6	11	14	15	4
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	16	18	21	19	18	22	20	13	22	20	21	20
	Zinc	mg/kg	0.5	**200**	*7000*	18	29	35	30	24	38	31	17	62	59	60	24
Organics	pH (Field)					-	-	-	-	-	-	-	-	-	-	-	-
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			<0.1	-	-	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1
	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		*10*	<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
	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
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2
	DDT+DDE+DDD	mg/kg			*200*	<0.3	-	-	<0.3	<0.3	-	-	<0.3	-	-	-	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2
	Bromophos-ethyl	mg/kg	0.2			<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2
	Chlorpyrifos	mg/kg	0.2			<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2
	Diazinon	mg/kg	0.5			<0.5	-	-	<0.5	<0.5	-	-	<0.5	-	-	-	<0.5
	Dichlorvos	mg/kg	1			<1	-	-	<1	<1	-	-	<1	-	-	-	<1
	Dimethoate	mg/kg	1			<1	-	-	<1	<1	-	-	<1	-	-	-	<1
	Ethion	mg/kg	0.2			<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2
	Fenitrothion	mg/kg	0.2			<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2
	Malathion	mg/kg	0.2			<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2
	Methidathion	mg/kg	0.5			<0.5	-	-	<0.5	<0.5	-	-	<0.5	-	-	-	<0.5
	Parathion	mg/kg	0.2			<0.2	-	-	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Canberra Investment Coorporation

Table LR3 - DOI 3
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Field_ID	RE19_0.0-0.2	RE19_0.5-0.6	RE20_0.0-0.2	RE20_0.5-0.6	RE22_0.0-0.2	RE25_0.0-0.2	RE26_0.0-0.2	RE26_0.5-0.6	RE28_0.0-0.2	RE28_0.5-0.6	RE29_0.0-0.2	RE41_0.0-0.2
					Sampled_Date-Time	23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	24/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009	24/07/2009	24/07/2009
					SampleComments	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***												
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	4	4	7	4	3	3	3	3	10	9	5	6
	Cadmium	mg/kg	0.3	**3**	*20*	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.3
	Chromium (III+VI)	mg/kg	0.3			17	18	18	19	17	13	16	16	16	21	21	18
	Copper	mg/kg	0.5	**100**	*1000*	19	19	18	20	7.9	12	6.2	6.5	9.7	11	9.9	15
	Lead	mg/kg	1	**0***	*300*	8	7	10	11	5	13	6	6	8	11	14	16
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	18	19	27	28	17	14	12	12	20	25	19	23
	Zinc	mg/kg	0.5	**200**	*7000*	37	35	60	61	27	58	19	17	41	46	56	63
Organics	pH (Field)					-	-	-	-	-	-	-	-	-	-	-	-
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	4,4-DDE	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	a-BHC	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	Aldrin	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	b-BHC	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
	d-BHC	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	DDD	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	DDT	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
	Endosulfan I	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	Endosulfan II	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	Endosulfan sulphate	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
	Endrin aldehyde	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
	g-BHC (Lindane)	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	Heptachlor	mg/kg	0.1		*10*	-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	Heptachlor epoxide	mg/kg	0.1			-	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	<0.1
	Hexachlorobenzene	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
	o,p'-DDD	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
	trans-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
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2
	DDT+DDE+DDD	mg/kg			*200*	-	-	<0.3	-	-	<0.3	-	-	<0.3	-	-	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2
	Bromophos-ethyl	mg/kg	0.2			-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2
	Chlorpyrifos	mg/kg	0.2			-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2
	Diazinon	mg/kg	0.5			-	-	<0.5	-	-	<0.5	-	-	<0.5	-	-	<0.5
	Dichlorvos	mg/kg	1			-	-	<1	-	-	<1	-	-	<1	-	-	<1
	Dimethoate	mg/kg	1			-	-	<1	-	-	<1	-	-	<1	-	-	<1
	Ethion	mg/kg	0.2			-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2
	Fenitrothion	mg/kg	0.2			-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2
	Malathion	mg/kg	0.2			-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2
	Methidathion	mg/kg	0.5			-	-	<0.5	-	-	<0.5	-	-	<0.5	-	-	<0.5
	Parathion	mg/kg	0.2			-	-	<0.2	-	-	<0.2	-	-	<0.2	-	-	<0.2

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Table LR3 - DOI 3
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

Canberra Investment Coorporation

					Field_ID	MS1-10_0.5-0.6	MS1-11_0.0-0.2	MS1-11_0.5-0.6	MS1-11_0.9-1.0	MS1-12_0.0-0.2	MS1-12_0.5-0.6	MS1-13_0.0-0.2	MS1-13_0.5-0.6	MS1-14_0.0-0.2	MS1-14_0.5-0.6	MS1-15_0.0-0.2	MS1-15_0.5-0.6	MS1-16_0.0-0.2
					Sampled_Date-Time	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
					SampleComments	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	11	10	9	11	6	6	6	6	8	7	6	10	8
	Cadmium	mg/kg	0.3	**3**	*20*	0.4	0.4	0.3	0.5	0.3	0.3	0.3	<0.3	0.5	0.4	<0.3	<0.3	0.4
	Chromium (III+VI)	mg/kg	0.3			23	24	21	31	22	21	20	20	20	28	17	22	25
	Copper	mg/kg	0.5	**100**	*1000*	31	21	20	19	14	15	32	50	15	27	21	26	25
	Lead	mg/kg	1	**0***	*300*	11	20	22	17	9	6	13	13	21	15	13	10	11
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	19	32	29	19	26	25	25	25	33	19	16	21	27
	Zinc	mg/kg	0.5	**200**	*7000*	45	80	87	51	55	51	62	51	150	62	52	53	60
Organics	pH (Field)					-	-	6.1	-	-	-	-	-	6.2	-	-	-	6.1
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-	-	-	-	-
						-	-	-	-	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments SPECIALISTS IN LIVING AND WORKING PLACES

Canberra Investment Coorporation

Table LR3 - DOI 3
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Field_ID	MS1-16_0.5-0.6	MS1-2_0.0-0.2	MS1-2_0.5-0.6	MS1-3_0.0-0.2	MS1-3_0.5-0.6	MS1-4_0.0-0.2	MS1-4_0.5-0.6	MS1-5_0.0-0.2	MS1-5_0.5-0.6	MS1-6_0.0-0.2	MS1-6_0.5-0.6	MS1-7_0.0-0.2	MS1-7_0.5-0.6
					Sampled_Date-Time	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
					SampleComments	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	7	10	9	12	12	4	<3	4	5	6	9	11	8
	Cadmium	mg/kg	0.3	**3**	*20*	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.9	0.5
	Chromium (III+VI)	mg/kg	0.3			22	22	21	24	25	18	21	18	18	17	19	20	18
	Copper	mg/kg	0.5	**100**	*1000*	22	19	27	9.1	8.1	14	16	13	17	11	23	14	14
	Lead	mg/kg	1	**0***	*300*	11	4	4	7	6	20	12	17	7	42	27	28	19
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	27	39	34	28	38	25	23	26	24	32	57	28	27
	Zinc	mg/kg	0.5	**200**	*7000*	62	40	30	37	41	71	47	69	46	120	84	**220**	**210**
Organics	pH (Field)					-	-	-	-	-	6.8	-	-	-	-	-	-	6.3
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-	-	-	-	-	-
						-	-	-	-	-	-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments
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Canberra Investment Coorporation

Table LR3 - DOI 3
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Field_ID	MS1-7_0.9-1.0	MS1-7_1.4-1.5	MS1-8_0.0-0.2	MS1-8_0.5-0.6	MS1-9_0.0-0.2	MS1-9_0.5-0.6	MS1SP1	MS1SP3
					Sampled_Date-Time	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009	13/08/2009	13/08/2009
					SampleComments	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1	Mine Site 1
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***								
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	11	8	9	7	9	7	10	10
	Cadmium	mg/kg	0.3	**3**	*20*	0.4	0.3	0.5	0.4	<0.3	<0.3	0.4	0.4
	Chromium (III+VI)	mg/kg	0.3			25	20	35	29	20	17	20	23
	Copper	mg/kg	0.5	**100**	*1000*	16	12	15	14	20	19	14	25
	Lead	mg/kg	1	**0***	*300*	12	6	35	32	7	9	23	8
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	30	33	34	34	34	31	39	33
	Zinc	mg/kg	0.5	**200**	*7000*	80	55	90	81	52	52	59	60
Organics	pH (Field)					-	6.7	-	-	6.9	-	-	-
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	-	-	-	-	-
	4,4-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-
	a-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.1			-	-	-	-	-	-	-	-
	b-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-
	cis-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.1			-	-	-	-	-	-	-	-
	DDD	mg/kg	0.1			-	-	-	-	-	-	-	-
	DDT	mg/kg	0.1			-	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.1			-	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.1			-	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.1			-	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.1			-	-	-	-	-	-	-	-
	Endrin	mg/kg	0.1			-	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.1			-	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.1			-	-	-	-	-	-	-	-
	g-BHC (Lindane)	mg/kg	0.1			-	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.1		*10*	-	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.1			-	-	-	-	-	-	-	-
	Hexachlorobenzene	mg/kg	0.1			-	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.1			-	-	-	-	-	-	-	-
	o,p'-DDD	mg/kg	0.1			-	-	-	-	-	-	-	-
	o,p'-DDE	mg/kg	0.1			-	-	-	-	-	-	-	-
	trans-chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-
	trans-Nonachlor	mg/kg	0.1			-	-	-	-	-	-	-	-
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	-	-	-	-	-
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	-	-	-	-	-
						-	-	-	-	-	-	-	-
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.2			-	-	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.2			-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.5			-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	1			-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	1			-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.2			-	-	-	-	-	-	-	-
	Fenitrothion	mg/kg	0.2			-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.2			-	-	-	-	-	-	-	-
	Methidathion	mg/kg	0.5			-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2			-	-	-	-	-	-	-	-

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments
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Canberra Investment Coorporation

Table LR4 - DOI 4
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

					Sample # and Depth	OS02_0.0-0.2	OS03_0.0-0.2	OS04_0.0-0.2	OS06_0.0-0.2	RE01_0.0-0.2	RE03_0.0-0.2	RE04_0.0-0.2	RE09_0.0-0.2	RE12_0.0-0.2
					Sampled_Date-Time	28/07/2009	24/07/2009	24/07/2009	24/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009	27/07/2009
					Area	Open Space	Open Space	Open Space	Open Space	Residential	Residential	Residential	Residential	Residential
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***									
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	3	6	3	9	8	5	4	4	4
	Cadmium	mg/kg	0.3	**3**	*20*	<0.3	0.4	0.91	<0.3	0.4	<0.3	0.4	<0.3	0.3
	Chromium (III+VI)	mg/kg	0.3			14	25	37	21	28	18	16	17	17
	Copper	mg/kg	0.5	**100**	*1000*	5.5	20	8.6	30	13	10	15	11	16
	Lead	mg/kg	1	**0***	*300*	18	7	11	130	68	30	20	25	13
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	14	23	15	24	20	17	26	11	28
	Zinc	mg/kg	0.5	**200**	*7000*	51	34	36	56	170	65	66	60	78
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			-	-	-	<0.1	-	-	-	-	<0.1
	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		*10*	-	-	-	<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
	trans-chlordane	mg/kg	0.1			-	-	-	<0.1	-	-	-	-	<0.1
	trans-Nonachlor	mg/kg	0.1			-	-	-	<0.1	-	-	-	-	<0.1
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	-	-	-	<0.2	-	-	-	-	<0.2
	DDT+DDE+DDD	mg/kg			*200*	-	-	-	<0.3	-	-	-	-	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			-	-	-	<0.2	-	-	-	-	<0.2
	Bromophos-ethyl	mg/kg	0.2			-	-	-	<0.2	-	-	-	-	<0.2
	Chlorpyrifos	mg/kg	0.2			-	-	-	<0.2	-	-	-	-	<0.2
	Diazinon	mg/kg	0.5			-	-	-	<0.5	-	-	-	-	<0.5
	Dichlorvos	mg/kg	1			-	-	-	<1	-	-	-	-	<1
	Dimethoate	mg/kg	1			-	-	-	<1	-	-	-	-	<1
	Ethion	mg/kg	0.2			-	-	-	<0.2	-	-	-	-	<0.2
	Fenitrothion	mg/kg	0.2			-	-	-	<0.2	-	-	-	-	<0.2
	Malathion	mg/kg	0.2			-	-	-	<0.2	-	-	-	-	<0.2
	Methidathion	mg/kg	0.5			-	-	-	<0.5	-	-	-	-	<0.5
	Parathion	mg/kg	0.2			-	-	-	<0.2	-	-	-	-	<0.2

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Table LR5 - DOI 5
Soil Analytical Results
Jumping Creek
ENVICANB00233AA

Canberra Investment Coorporation

Method_Type	ChemName	Units	EQL	NEPM 1999 EIL	NEPM 1999 HIL A	OS01_0.0-0.2	OS09_0.0-0.2	OS11_0.0-0.2	OS12_0.0-0.2	RE07_0.0-0.2	RE08_0.0-0.2	RE11_0.0-0.2	RE16_0.0-0.2	RE17_0.0-0.2	RE18_0.0-0.2	RE21_0.0-0.2	RE23_0.0-0.2	RE27_0.0-0.2
					Sampled_Date-Time	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
					Area	Open Space	Open Space	Open Space	Open Space	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	12	5	<3	<3	7	7	<3	3	<3	10	<3	<3	<3
	Cadmium	mg/kg	0.3	**3**	*20*	0.3	0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	2.1	<0.3	<0.3	<0.3
	Chromium (III+VI)	mg/kg	0.3			18	21	20	14	17	20	18	17	17	19	14	23	21
	Copper	mg/kg	0.5	**100**	*1000*	12	14	6.4	9.8	6.3	11	7.3	14	15	16	8.1	15	7.5
	Lead	mg/kg	1	**600**	*300*	26	24	13	11	14	34	6	20	24	280	12	54	9.6
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	21	23	12	13	12	17	9.7	18	16	18	8.7	16	14
	Zinc	mg/kg	0.5	**200**	*7000*	84	120	43	20	26	52	36	62	52	**1100**	40	69	48
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	4,4-DDE	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	a-BHC	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	Aldrin	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	b-BHC	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
	d-BHC	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	DDD	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	DDT	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
	Endosulfan I	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	Endosulfan II	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	Endosulfan sulphate	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
	Endrin aldehyde	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
	g-BHC (Lindane)	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	Heptachlor	mg/kg	0.1		*10*	<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	Heptachlor epoxide	mg/kg	0.1			<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	<0.1
	Hexachlorobenzene	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
	o,p'-DDD	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
	trans-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
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2
	DDT+DDE+DDD	mg/kg			*200*	<0.3	-	-	-	-	-	-	<0.3	<0.3	-	-	-	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2
	Bromophos-ethyl	mg/kg	0.2			<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2
	Chlorpyrifos	mg/kg	0.2			<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2
	Diazinon	mg/kg	0.5			<0.5	-	-	-	-	-	-	<0.5	<0.5	-	-	-	<0.5
	Dichlorvos	mg/kg	1			<1	-	-	-	-	-	-	<1	<1	-	-	-	<1
	Dimethoate	mg/kg	1			<1	-	-	-	-	-	-	<1	<1	-	-	-	<1
	Ethion	mg/kg	0.2			<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2
	Fenitrothion	mg/kg	0.2			<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2
	Malathion	mg/kg	0.2			<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2
	Methidathion	mg/kg	0.5			<0.5	-	-	-	-	-	-	<0.5	<0.5	-	-	-	<0.5
	Parathion	mg/kg	0.2			<0.2	-	-	-	-	-	-	<0.2	<0.2	-	-	-	<0.2

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

Canberra Investment Coorporation

Table LR6 - Drainage Channels
Sediment Analytical Results
Jumping Creek
ENVICANB00233AA

					Field_ID	DC1	DC2	DC3	DC4	DC5	DC6	DC7	DC8	DC9	DC10	DC12	DC13	QC14
					Sampled_Date-Time	7/08/2009	7/08/2009	10/08/2009	10/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	10/08/2009	10/08/2009	7/08/2009
					Area	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 1999 EIL**	***NEPM 1999 HIL A***													
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**20**	*100*	9	4	5	5	3	5	5	6	8	5	<3	**33**	6
	Cadmium	mg/kg	0.3	**3**	*20*	<0.3	0.4	<0.3	<0.3	0.3	0.3	0.3	<0.3	0.4	0.3	<0.3	0.7	<0.3
	Chromium (III+VI)	mg/kg	0.3			23	14	20	17	15	16	19	17	20	16	12	19	20
	Copper	mg/kg	0.5	**100**	*1000*	17	15	17	7.8	15	11	8.9	8.1	18	10	6.9	24	10
	Lead	mg/kg	1	**0***	*300*	26	130	12	9	13	9.4	13	11	12	12	9	94	13
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05	**1**	*15*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**60**	*600*	18	15	23	18	13	17	18	17	19	18	9.1	26	17
	Zinc	mg/kg	0.5	**200**	*7000*	56	**210**	52	36	61	68	76	46	67	61	18	180	49
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	4,4-DDE	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	a-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Aldrin	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	b-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	cis-Chlordane	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	d-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	DDD	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	DDT	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dieldrin	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan I	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan II	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin aldehyde	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin ketone	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	g-BHC (Lindane)	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor	mg/kg	0.1		*10*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Hexachlorobenzene	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Methoxychlor	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDD	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDE	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-chlordane	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-Nonachlor	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			*10*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDT+DDE+DDD	mg/kg			*200*	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Bromophos-ethyl	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Chlorpyrifos	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Diazinon	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	mg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dimethoate	mg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Fenitrothion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Malathion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Methidathion	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Parathion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Notes:
*Only lead concentrations exceeding HILA have been shaded
Bold = EIL exceedence
Italics = HILA exceedence
-' indicates Not Analysed

coffey environments
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Table LR7
Groundwater and Surface Water Analytical Results
Jumping Creek
ENVICANB00233AA

				Field_ID	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	SW1	SW2	SW3
				Sampled_Date-Time	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	13/08/2009	13/08/2009	13/08/2009
				SampleComments	DOI1	DOI1	DOI1	DOI2	DOI2	DOI2	DOI2	DOI4	Drainage C.	Drainage C.	Drainage C.
Method_Type	**ChemName**	**Units**	**EQL**	**ANZECC & ARMCANZ 2000**											
Trace HM (ICP-MS)-Dissolved	Arsenic	mg/L	0.001		0.015	0.001	0.002	<0.001	0.006	0.002	0.038	0.014	<0.001	<0.001	<0.001
	Cadmium	mg/L	0.0001	**0.0002**	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium (III+VI)	mg/L	0.001		<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper	mg/L	0.001	**0.0014**	**0.002**	**0.003**	**0.002**	0.001	0.001	**0.003**	0.001	<0.001	0.001	**0.004**	**0.005**
	Lead	mg/L	0.001	**0.0034**	**0.006**	**0.2**	**0.009**	**0.03**	0.003	**0.042**	<0.001	**0.009**	<0.001	<0.001	<0.001
	Nickel	mg/L	0.001	**0.011**	0.001	0.001	<0.001	0.005	0.002	0.002	0.001	0.004	<0.001	<0.001	<0.001
	Zinc	mg/L	0.001	**0.008**	0.006	**0.01**	0.005	**0.008**	**0.011**	**0.014**	0.003	**0.008**	**0.008**	**0.016**	**0.01**
Anions in water	Sulphate	mg/L	0.1	**400**	62	25	35	81	150	130	22	200	19	18	11
ESDAT Combined Compounds	Aldrin + Dieldrin	µg/L			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
	DDT+DDE+DDD	µg/L			<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Inorganics	pH (Lab)	pH_Units	0		7.4	7.4	7.3	7	7.2	7	8.1	7.4	-	-	-
Mercury Cold Vapor/Hg Analyser	Mercury (Filtered)	mg/L	0.0001	**0.0006**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-
OC Pesticides in Water	2,4-DDT	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	4,4-DDE	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	a-BHC	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aldrin	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	b-BHC	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	cis-Chlordane	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	d-BHC	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDD	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDT	µg/L	0.2	**0.01**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Dieldrin	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endosulfan I	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endosulfan II	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endosulfan sulphate	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endrin	µg/L	0.2	**0.02**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Endrin aldehyde	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endrin ketone	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	g-BHC (Lindane)	µg/L	0.2	**0.2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Heptachlor	µg/L	0.2	**0.09**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Heptachlor epoxide	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Hexachlorobenzene	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Methoxychlor	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	o,p'-DDD	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	o,p'-DDE	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	trans-chlordane	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	trans-Nonachlor	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
OP Pesticides in Water by GCMS	Azinophos methyl	µg/L	0.2	**0.02**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**
	Bromophos-ethyl	µg/L	0.2		-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2
	Chlorpyrifos	µg/L	0.2	**0.01**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**
	Diazinon	µg/L	0.5	**0.01**	-	-	-	-	-	-	-	-	**<0.5**	**<0.5**	**<0.5**
	Dichlorvos	µg/L	1		-	-	-	-	-	-	-	-	<1	<1	<1
	Dimethoate	µg/L	1	**0.15**	-	-	-	-	-	-	-	-	**<1**	**<1**	**<1**
	Ethion	µg/L	0.2		-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2
	Fenitrothion	µg/L	0.2	**0.2**	-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2
	Malathion	µg/L	0.2	**0.05**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**
	Methidathion	µg/L	0.5		-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5
	Parathion	µg/L	0.2	**0.004**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**

Notes:
-' denotes Not Analysed

Table LR8
TCLP Analytical Results
Jumping Creek
ENVICANB00233AA

					Field_ID	MP15_0.0-0.2	MS3-8_0.0-0.2	MS4-26A_0.5-0.6	MS4-27_0.0-0.2	MS4SP1	MS4SP9	RE34_0.0-0.2
					LocCode	MP15_0.0-0.2	MS3-8_0.0-0.2	MS4-26A_0.5-0.6	MS4-27_0.0-0.2	MS4SP1	MS4SP9	RE34_0.0-0.2
					Sample_Depth_Range							
					Sampled_Date-Time	5/08/2009	28/07/2009	6/08/2009	6/08/2009	13/08/2009	13/08/2009	27/07/2009
					Matrix_Description							
Method_Type	**ChemName**	**Units**	**EQL**	**NSW 2008 General Solid Waste (leached)**	***NSW 2008 Restricted Solid Waste (leached)***							
Metals in TCLP	Arsenic	mg/L	0.05	**5.02**	*20*	-	0.44	<0.05	-	<0.05	-	<0.05
	Cadmium	mg/L	0.005	**1.02**	*4*	-	0.18	-	-	**1.7**	-	-
	Lead	mg/L	0.02	**5**	*20*	0.07	0.16	-	***370***	-	***500***	-
	Zinc	mg/L	0.01			-	-	-	-	490	-	-

Notes:
-' denotes Not Analysed

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Table LR9
Soil - NAPG NAGG Analytical Results
Jumping Creek
ENVICANB00233AA

Canberr Investment Coorporation

			Field_ID	MS1SP1	MS1SP1	MS1SP2	MS1SP3	MS1SP4	MS3SP1	MS3SP2	MS3SP3	MS4SP1	MS4SP2	MS4SP3
			Sampled_Date-Time	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
			Sample Comments	Mine site 1	Mine site 1	Mine site 1	Mine site 1	Mine site 1	Mine site 3	Mine site 3	Mine site 3	Mine site 4	Mine site 4	Mine site 4
Method_Type	**ChemName**	**Units**	**EQL**											
AN106	Aged EC (1:2)	mS/cm	<5	65	64	64	91	34	110	100	73	230	420	180
AN212 CEI-400	pH (Paste)	pH Units	<0.1	7	7	7.2	7.1	6.9	8.8	8.9	9	8.1	8.1	8.4
ASSMAC_20A	Total Sulfur #	% w/w	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	0.031	0.023	66	0.025	0.033	<0.005
ASSMAC_20B	S_{HCl} #	% w/w	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.024	<0.005
Calculation	Total Oxidisable Sulfur, TOS #	% w/w	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.025	0.02	0.062	0.021	0.009	<0.005
ASSMAC_19A1/AN214	Acid Neutralisation Capacity	% $CaCO_3$	<0.1	0.3	0.3	0.3	0.3	0.3	90	75	89	0.4	1.5	8.3
ASSMAC_19A1/AN214	Acid Neutralisation Capacity	kgH_2SO_4/tonne	<0.5	2.5	2.5	2.5	2.5	2.5	880	730	870	3.7	15	81
AN215 CEI-043	NAGP #	kg H_2SO_4/tonne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.6	1.9	0.6	<0.5	<0.5
Calculation	NAGP (inc ANC) #	kg H_2SO_4/tonne		-2	-2	-2	-2	-2	-9.00E+02	-8.00E+02	-9.00E+02	-3	-10	-80
AN212 CEI-400	pH $_{Ox}$	pH Units	<0.1	5.8	5.7	6.2	6.1	5.5	10.2	12	12	7.5	8.1	10.4
AN212 CEI-400	Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:
-' denotes Not Analysed

Table LR9
Soil - NAPG NAGG Analytical Results
Jumping Creek
ENVICANB00233AA

Method_Type	ChemName	Units	EQL									
			Field_ID	MS1SP1	MS4SP4	MS4SP4	MS4SP5	MS4SP6	MS4SP7	MS4SP8	MS4SP9	MS4SP10
			Sampled_Date-Time	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
			Sample Comments	Mine site 1	Mine site 4	Mine site 4	Mine site 4	Mine site 4	Mine site 4	Mine site 4	Mine site 4	Mine site 4
AN106	Aged EC (1:2)	mS/cm	<5	65	200	200	150	160	250	210	200	290
AN212 CEI-400	pH (Paste)	pH Units	<0.1	7	8.3	8.3	8.2	8.7	8.4	8.2	7.4	8
ASSMAC_20A	Total Sulfur #	% w/w	<0.005	<0.005	0.021	0.021	<0.005	0.028	0.016	0.015	0.037	<0.005
ASSMAC_20B	S_{HCl} #	% w/w	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	<0.005	0.007	0.013	<0.005
Calculation	Total Oxidisable Sulfur, TOS #	% w/w	<0.005	<0.005	0.018	0.018	<0.005	0.015	0.012	0.008	0.021	<0.005
ASSMAC_19A1/AN214	Acid Neutralisation Capacity	% $CaCO_3$	<0.1	0.3	2.3	2.1	0.4	19	0.3	0.4	0.9	6.8
ASSMAC_19A1/AN214	Acid Neutralisation Capacity	kgH_2SO_4/tonne	<0.5	2.5	22	21	3.7	190	2.5	3.7	8.6	66
AN215 CEI-043	NAGP #	kg H_2SO_4/tonne	<0.5	<0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
Calculation	NAGP (inc ANC) #	kg H_2SO_4/tonne		-2	-20	-20	-4	-2.00E+02	-2	-3	-8	-70
AN212 CEI-400	pH_{Ox}	pH Units	<0.1	5.8	8.9	9	7.4	10.1	7.4	7.7	7.8	8.7
AN212 CEI-400	Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:
-' denotes Not Analysed

Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	SE70874	SE70874		SE70984	SE70984		SE70984	SE70984		SE70984	SE70984		SE70984
			Field_ID	RE10_0.0-0.2	QC1	**RPD**	RE41_0.0-0.2	QC2	**RPD**	RE34_0.0-0.2	QC3	**RPD**	K1_0.0-0.2	QC4	**RPD**	MS3-1_0.0-0.2
			Sampled_Date-Time	23/07/2009	23/07/2009		24/07/2009	24/07/2009		27/07/2009	27/07/2009		28/07/2009	28/07/2009		28/07/2009
Method_Type	**ChemName**	**Units**	**EQL**													
Cyanide	Cyanide Total	mg/kg	0.1 (Primary): 5 (Interlab)													
Inorganics	pH (Field)	pH_Units	0										8.2	7.9	4	
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0				0.13
Metals in Soil by ICP-OES	Arsenic	mg/kg	3 (Primary): 2 (Interlab)	5.0	5.0	0	6.0	6.0	0	130.0	110.0	17				1700.0
	Cadmium	mg/kg	0.3 (Primary): 0.5 (Interla	<0.3	<0.3	0	0.3	0.3	0	0.5	0.4	22				12.0
	Chromium (III+VI)	mg/kg	0.3 (Primary): 5 (Interlab	15.0	17.0	13	18.0	19.0	5	20.0	20.0	0				21.0
	Copper	mg/kg	0.5 (Primary): 5 (Interlab	5.5	5.8	5	15.0	16.0	6	40.0	34.0	16				110.0
	Lead	mg/kg	1 (Primary): 5 (Interlab)	6.0	6.0	0	16.0	16.0	0	85.0	76.0	11				1600.0
	Nickel	mg/kg	0.5 (Primary): 5 (Interlab	13.0	13.0	0	23.0	22.0	4	32.0	28.0	13				18.0
	Zinc	mg/kg	0.5 (Primary): 5 (Interlab	17.0	18.0	6	63.0	66.0	5	140.0	130.0	7				2200.0
Moisture	Moisture	%	1	9.0	10.0	11	16.0	17.0	6	8.0	8.0	0	26.0	26.0	0	17.0
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0							
	4,4-DDE	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	a-BHC	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Aldrin	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	b-BHC	mg/kg	0.1 (Primary): 0.05 (Inter	<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							
	d-BHC	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	DDD	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	DDT	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Dieldrin	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Endosulfan I	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Endosulfan II	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Endosulfan sulphate	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Endrin	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Endrin aldehyde	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Endrin ketone	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	g-BHC (Lindane)	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Heptachlor	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Heptachlor epoxide	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Hexachlorobenzene	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1	<0.1	0	<0.1	<0.1	0							
	Methoxychlor	mg/kg	0.1 (Primary): 0.05 (Inter	<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							
	o,p'-DDE	mg/kg	0.1	<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							
	trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0							
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
	Bromophos-ethyl	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
	Chlorpyrifos	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
	Diazinon	mg/kg	0.5 (Primary): 0.2 (Interla	<0.5	<0.5	0	<0.5	<0.5	0							
	Dichlorvos	mg/kg	1 (Primary): 0.2 (Interlab	<1.0	<1.0	0	<1.0	<1.0	0							
	Dimethoate	mg/kg	1	<1.0	<1.0	0	<1.0	<1.0	0							
	Ethion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
	Fenitrothion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
	Malathion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
	Methidathion	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0							
	Parathion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
PAHs in Soil	1-Methylnaphthalene	mg/kg	0.1										<0.1	<0.1	0	

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Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	SE70874	SE70874		SE70984	SE70984		SE70984	SE70984		SE70984	SE70984		SE70984
			Field_ID	RE10_0.0-0.2	QC1	**RPD**	RE41_0.0-0.2	QC2	**RPD**	RE34_0.0-0.2	QC3	**RPD**	K1_0.0-0.2	QC4	**RPD**	MS3-1_0.0-0.2
			Sampled_Date-Time	23/07/2009	23/07/2009		24/07/2009	24/07/2009		27/07/2009	27/07/2009		28/07/2009	28/07/2009		28/07/2009
	2-methylnaphthalene	mg/kg	0.1										<0.1	<0.1	0	
	Acenaphthene	mg/kg	0.1										<0.1	<0.1	0	
	Acenaphthylene	mg/kg	0.1										<0.1	<0.1	0	
	Anthracene	mg/kg	0.1										<0.1	<0.1	0	
	Benz(a)anthracene	mg/kg	0.1										<0.1	<0.1	0	
	Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.1 (Interlab)										<0.05	<0.05	0	
	Benzo(b)&(k)fluoranthene	mg/kg	0.2										<0.2	<0.2	0	
	Benzo(g,h,i)perylene	mg/kg	0.1										<0.1	<0.1	0	
	Chrysene	mg/kg	0.1										<0.1	<0.1	0	
	Dibenz(a,h)anthracene	mg/kg	0.1										<0.1	<0.1	0	
	Fluoranthene	mg/kg	0.1										<0.1	<0.1	0	
	Fluorene	mg/kg	0.1										<0.1	<0.1	0	
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1										<0.1	<0.1	0	
	Naphthalene	mg/kg	0.1										<0.1	<0.1	0	
	PAHs (Sum of total)	mg/kg	1.75 (Primary): 0.1 (Interlab)										<1.75	<1.75	0	
	Phenanthrene	mg/kg	0.1										<0.1	<0.1	0	
	Pyrene	mg/kg	0.1										<0.1	<0.1	0	

*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: 100 (5-10 x EQL); 50 (10-30 x EQL); 30 (> 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

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Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	SE70984		SE71036	SE71036		SE71036	SE71036		SE71167	SE71167		SE71167	SE71167	
			Field_ID	QC5	**RPD**	MS1-1_0.0-0.2	QC6	**RPD**	MS1-14_0.0-0.2	QC7	**RPD**	MP1_0.0-0.2	QC8	**RPD**	MP14_0.0-0.2	QC9	**RPD**
			Sampled_Date-Time	28/07/2009		30/07/2009	30/07/2009		30/07/2009	30/07/2009		4/08/2009	4/08/2009		5/08/2009	5/08/2009	
Method_Type	**ChemName**	**Units**	**EQL**														
Cyanide	Cyanide Total	mg/kg	0.1 (Primary): 5 (Interlab									0.2	0.2	0	0.5	0.4	22
Inorganics	pH (Field)	pH_Units	0			6.6	6.2	6	6.2	7.2	15						
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05 (Primary): 0.1 (Inter	0.1	26	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Metals in Soil by ICP-OES	Arsenic	mg/kg	3 (Primary): 2 (Interlab)	1700.0	0	7.0	8.0	13	8.0	6.0	29	12.0	10.0	18	33.0	32.0	3
	Cadmium	mg/kg	0.3 (Primary): 0.5 (Interla	10.0	18	0.4	0.3	29	0.5	0.4	22	0.5	0.4	22	2.2	1.9	15
	Chromium (III+VI)	mg/kg	0.3 (Primary): 5 (Interlab	20.0	5	21.0	18.0	15	20.0	20.0	0	26.0	23.0	12	25.0	24.0	4
	Copper	mg/kg	0.5 (Primary): 5 (Interlab	110.0	0	12.0	12.0	0	15.0	17.0	13	14.0	12.0	15	22.0	20.0	10
	Lead	mg/kg	1 (Primary): 5 (Interlab)	1300.0	21	6.0	6.0	0	21.0	15.0	33	120.0	100.0	18	300.0	300.0	0
	Nickel	mg/kg	0.5 (Primary): 5 (Interlab	17.0	6	31.0	29.0	7	33.0	25.0	28	14.0	12.0	15	20.0	19.0	5
	Zinc	mg/kg	0.5 (Primary): 5 (Interlab	2000.0	10	40.0	39.0	3	**150.0**	**91.0**	**49**	160.0	140.0	13	610.0	580.0	5
Moisture	Moisture	%	1	16.0	6	**6.0**	**14.0**	**80**	9.0	9.0	0	13.0	12.0	8	10.0	8.0	22
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1									<0.1	<0.1	0	<0.1	<0.1	0
	4,4-DDE	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	a-BHC	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Aldrin	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	b-BHC	mg/kg	0.1 (Primary): 0.05 (Inter									<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
	d-BHC	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	DDD	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	DDT	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Dieldrin	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Endosulfan I	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Endosulfan II	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Endosulfan sulphate	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Endrin	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Endrin aldehyde	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Endrin ketone	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	g-BHC (Lindane)	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Heptachlor	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Heptachlor epoxide	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Hexachlorobenzene	mg/kg	0.1 (Primary): 0.05 (Inter									<0.1	<0.1	0	<0.1	<0.1	0
	Methoxychlor	mg/kg	0.1 (Primary): 0.05 (Inter									<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
	o,p'-DDE	mg/kg	0.1									<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
	trans-Nonachlor	mg/kg	0.1									<0.1	<0.1	0	<0.1	<0.1	0
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2														
	Bromophos-ethyl	mg/kg	0.2														
	Chlorpyrifos	mg/kg	0.2														
	Diazinon	mg/kg	0.5 (Primary): 0.2 (Interla														
	Dichlorvos	mg/kg	1 (Primary): 0.2 (Interlab														
	Dimethoate	mg/kg	1														
	Ethion	mg/kg	0.2														
	Fenitrothion	mg/kg	0.2														
	Malathion	mg/kg	0.2														
	Methidathion	mg/kg	0.5														
	Parathion	mg/kg	0.2														
PAHs in Soil	1-Methylnaphthalene	mg/kg	0.1														

Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	SE70984		SE71036	SE71036		SE71036	SE71036		SE71167	SE71167		SE71167	SE71167	
			Field_ID	QC5	**RPD**	MS1-1_0.0-0.2	QC6	**RPD**	MS1-14_0.0-0.2	QC7	**RPD**	MP1_0.0-0.2	QC8	**RPD**	MP14_0.0-0.2	QC9	**RPD**
			Sampled_Date-Time	28/07/2009		30/07/2009	30/07/2009		30/07/2009	30/07/2009		4/08/2009	4/08/2009		5/08/2009	5/08/2009	
	2-methylnaphthalene	mg/kg	0.1														
	Acenaphthene	mg/kg	0.1														
	Acenaphthylene	mg/kg	0.1														
	Anthracene	mg/kg	0.1														
	Benz(a)anthracene	mg/kg	0.1														
	Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.1 (Inter														
	Benzo(b)&(k)fluoranthene	mg/kg	0.2														
	Benzo(g,h,i)perylene	mg/kg	0.1														
	Chrysene	mg/kg	0.1														
	Dibenz(a,h)anthracene	mg/kg	0.1														
	Fluoranthene	mg/kg	0.1														
	Fluorene	mg/kg	0.1														
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1														
	Naphthalene	mg/kg	0.1														
	PAHs (Sum of total)	mg/kg	1.75 (Primary): 0.1 (Inter														
	Phenanthrene	mg/kg	0.1														
	Pyrene	mg/kg	0.1														

*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: 100 (5-10 x EQL); 50 (10-3
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

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Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	SE71167	SE71167		SE71167	Interlab_D		SE71167	Interlab_D		SE71167	Interlab_D		SE71036	Interlab_D	
			Field_ID	SP1	QC10	**RPD**	MP1_0.0-0.2	QC8A	**RPD**	MP14_0.0-0.2	QC9A	**RPD**	SP1	QC10A	**RPD**	MS1-1_0.0-0.2	QC6A	**RPD**
			Sampled_Date-Time	5/08/2009	5/08/2009		4/08/2009	4/08/2009		5/08/2009	5/08/2009		5/08/2009	5/08/2009		30/07/2009	30/07/2009	
Method_Type	**ChemName**	**Units**	**EQL**															
Cyanide	Cyanide Total	mg/kg	0.1 (Primary): 5 (Interlab				0.2	<5.0	0	0.5	<5.0	0						
Inorganics	pH (Field)	pH_Units	0													6.6		
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.05	0	<0.05	<0.1	0	<0.05	<0.1	0	<0.05	<0.1	0	<0.05	<0.1	0
Metals in Soil by ICP-OES	Arsenic	mg/kg	3 (Primary): 2 (Interlab)	17.0	15.0	13	12.0	8.3	36	33.0	37.0	11	17.0	16.0	6	7.0	6.4	9
	Cadmium	mg/kg	0.3 (Primary): 0.5 (Interla	0.7	0.8	13	0.5	<0.5	0	2.2	1.9	15	0.7	<0.5	33	0.4	<0.5	0
	Chromium (III+VI)	mg/kg	0.3 (Primary): 5 (Interlab	21.0	22.0	5	26.0	28.0	7	25.0	29.0	15	21.0	22.0	5	21.0	19.0	10
	Copper	mg/kg	0.5 (Primary): 5 (Interlab	23.0	24.0	4	14.0	11.0	24	22.0	23.0	4	23.0	28.0	20	**12.0**	**22.0**	**59**
	Lead	mg/kg	1 (Primary): 5 (Interlab)	90.0	73.0	21	120.0	97.0	21	300.0	350.0	15	90.0	75.0	18	6.0	5.6	7
	Nickel	mg/kg	0.5 (Primary): 5 (Interlab	31.0	30.0	3	14.0	16.0	13	20.0	26.0	26	31.0	33.0	6	31.0	32.0	3
	Zinc	mg/kg	0.5 (Primary): 5 (Interlab	450.0	460.0	2	160.0	150.0	6	610.0	750.0	21	450.0	380.0	17	40.0	38.0	5
Moisture	Moisture	%	1	11.0	12.0	9	13.0			10.0			11.0			6.0		
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1				<0.1			<0.1								
	4,4-DDE	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	a-BHC	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Aldrin	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	b-BHC	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	cis-Chlordane	mg/kg	0.1				<0.1			<0.1								
	d-BHC	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	DDD	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	DDT	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Dieldrin	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Endosulfan I	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Endosulfan II	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Endosulfan sulphate	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Endrin	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Endrin aldehyde	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Endrin ketone	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	g-BHC (Lindane)	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Heptachlor	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Heptachlor epoxide	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Hexachlorobenzene	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	Methoxychlor	mg/kg	0.1 (Primary): 0.05 (Inter	<0.1			<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0			
	o,p'-DDD	mg/kg	0.1				<0.1			<0.1								
	o,p'-DDE	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								
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2															
	Bromophos-ethyl	mg/kg	0.2															
	Chlorpyrifos	mg/kg	0.2															
	Diazinon	mg/kg	0.5 (Primary): 0.2 (Interla															
	Dichlorvos	mg/kg	1 (Primary): 0.2 (Interlab															
	Dimethoate	mg/kg	1															
	Ethion	mg/kg	0.2															
	Fenitrothion	mg/kg	0.2															
	Malathion	mg/kg	0.2															
	Methidathion	mg/kg	0.5															
	Parathion	mg/kg	0.2															
PAHs in Soil	1-Methylnaphthalene	mg/kg	0.1															

Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	SE71167	SE71167		SE71167	Interlab_D		SE71167	Interlab_D		SE71167	Interlab_D		SE71036	Interlab_D	
			Field_ID	SP1	QC10	**RPD**	MP1_0.0-0.2	QC8A	**RPD**	MP14_0.0-0.2	QC9A	**RPD**	SP1	QC10A	**RPD**	MS1-1_0.0-0.2	QC6A	**RPD**
			Sampled_Date-Time	5/08/2009	5/08/2009		4/08/2009	4/08/2009		5/08/2009	5/08/2009		5/08/2009	5/08/2009		30/07/2009	30/07/2009	
	2-methylnaphthalene	mg/kg	0.1															
	Acenaphthene	mg/kg	0.1															
	Acenaphthylene	mg/kg	0.1															
	Anthracene	mg/kg	0.1															
	Benz(a)anthracene	mg/kg	0.1															
	Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.1 (Inter															
	Benzo(b)&(k)fluoranthene	mg/kg	0.2															
	Benzo(g,h,i)perylene	mg/kg	0.1															
	Chrysene	mg/kg	0.1															
	Dibenz(a,h)anthracene	mg/kg	0.1															
	Fluoranthene	mg/kg	0.1															
	Fluorene	mg/kg	0.1															
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1															
	Naphthalene	mg/kg	0.1															
	PAHs (Sum of total)	mg/kg	1.75 (Primary): 0.1 (Inter															
	Phenanthrene	mg/kg	0.1															
	Pyrene	mg/kg	0.1															

*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: 100 (5-10 x EQL); 50 (10-3
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

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Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

Method_Type	ChemName	Units	EQL	SE71036	Interlab_D		SE70984	Interlab_D		SE70984	Interlab_D		SE70984	Interlab_D		SE70984
			Field_ID	MS1-14_0.0-0.2	QC7A	**RPD**	RE41_0.0-0.2	QC2A	**RPD**	RE34_0.0-0.2	QC3A	**RPD**	K1_0.0-0.2	QC4A	**RPD**	MS3-1_0.0-0.2
			Sampled_Date-Time	30/07/2009	30/07/2009		24/07/2009	24/07/2009		27/07/2009	27/07/2009		28/07/2009	28/07/2009		28/07/2009
Method_Type	**ChemName**	**Units**	**EQL**													
Cyanide	Cyanide Total	mg/kg	0.1 (Primary): 5 (Interlab													
Inorganics	pH (Field)	pH_Units	0	6.2									8.2			
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05 (Primary): 0.1 (Inter	<0.05	<0.1	0	<0.05	<0.1	0	<0.05	<0.1	0				0.13
Metals in Soil by ICP-OES	Arsenic	mg/kg	3 (Primary): 2 (Interlab)	8.0	4.9	48	6.0	8.4	33	130.0	160.0	21				1700.0
	Cadmium	mg/kg	0.3 (Primary): 0.5 (Interla	0.5	<0.5	0	0.3	<0.5	0	0.5	0.7	33				12.0
	Chromium (III+VI)	mg/kg	0.3 (Primary): 5 (Interlab	20.0	25.0	22	18.0	19.0	5	20.0	23.0	14				21.0
	Copper	mg/kg	0.5 (Primary): 5 (Interlab	15.0	13.0	14	15.0	20.0	29	40.0	39.0	3				110.0
	Lead	mg/kg	1 (Primary): 5 (Interlab)	21.0	15.0	33	16.0	16.0	0	**85.0**	**240.0**	**95**				1600.0
	Nickel	mg/kg	0.5 (Primary): 5 (Interlab	33.0	30.0	10	23.0	24.0	4	32.0	25.0	25				18.0
	Zinc	mg/kg	0.5 (Primary): 5 (Interlab	**150.0**	**86.0**	**54**	63.0	63.0	0	**140.0**	**390.0**	**94**				2200.0
Moisture	Moisture	%	1	9.0			16.0			8.0			26.0			17.0
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1				<0.1									
	4,4-DDE	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	a-BHC	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Aldrin	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	b-BHC	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	cis-Chlordane	mg/kg	0.1				<0.1									
	d-BHC	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	DDD	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	DDT	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Dieldrin	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Endosulfan I	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Endosulfan II	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Endosulfan sulphate	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Endrin	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Endrin aldehyde	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Endrin ketone	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	g-BHC (Lindane)	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Heptachlor	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Heptachlor epoxide	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Hexachlorobenzene	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	Methoxychlor	mg/kg	0.1 (Primary): 0.05 (Inter				<0.1	<0.05	0							
	o,p'-DDD	mg/kg	0.1				<0.1									
	o,p'-DDE	mg/kg	0.1				<0.1									
	trans-chlordane	mg/kg	0.1				<0.1									
	trans-Nonachlor	mg/kg	0.1				<0.1									
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2				<0.2	<0.5	0							
	Bromophos-ethyl	mg/kg	0.2				<0.2									
	Chlorpyrifos	mg/kg	0.2				<0.2	<0.2	0							
	Diazinon	mg/kg	0.5 (Primary): 0.2 (Interla				<0.5	<0.2	0							
	Dichlorvos	mg/kg	1 (Primary): 0.2 (Interlab				<1.0	<0.2	0							
	Dimethoate	mg/kg	1				<1.0									
	Ethion	mg/kg	0.2				<0.2	<0.2	0							
	Fenitrothion	mg/kg	0.2				<0.2	<0.2	0							
	Malathion	mg/kg	0.2				<0.2									
	Methidathion	mg/kg	0.5				<0.5									
	Parathion	mg/kg	0.2				<0.2									
PAHs in Soil	1-Methylnaphthalene	mg/kg	0.1										<0.1			

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Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

		SDG	SE71036	Interlab_D		SE70984	Interlab_D		SE70984	Interlab_D		SE70984	Interlab_D		SE70984
		Field_ID	MS1-14_0.0-0.2	QC7A	**RPD**	RE41_0.0-0.2	QC2A	**RPD**	RE34_0.0-0.2	QC3A	**RPD**	K1_0.0-0.2	QC4A	**RPD**	MS3-1_0.0-0.2
		Sampled_Date-Time	30/07/2009	30/07/2009		24/07/2009	24/07/2009		27/07/2009	27/07/2009		28/07/2009	28/07/2009		28/07/2009
2-methylnaphthalene	mg/kg	0.1										<0.1			
Acenaphthene	mg/kg	0.1										<0.1	<0.1	0	
Acenaphthylene	mg/kg	0.1										<0.1	<0.1	0	
Anthracene	mg/kg	0.1										<0.1	<0.1	0	
Benz(a)anthracene	mg/kg	0.1										<0.1	<0.1	0	
Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.1 (Inter										<0.05	<0.1	0	
Benzo(b)&(k)fluoranthene	mg/kg	0.2										<0.2			
Benzo(g,h,i)perylene	mg/kg	0.1										<0.1	<0.1	0	
Chrysene	mg/kg	0.1										<0.1	<0.1	0	
Dibenz(a,h)anthracene	mg/kg	0.1										<0.1	<0.1	0	
Fluoranthene	mg/kg	0.1										<0.1	<0.1	0	
Fluorene	mg/kg	0.1										<0.1	<0.1	0	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1										<0.1	<0.1	0	
Naphthalene	mg/kg	0.1										<0.1	<0.1	0	
PAHs (Sum of total)	mg/kg	1.75 (Primary): 0.1 (Inter										<1.75	<0.1	0	
Phenanthrene	mg/kg	0.1										<0.1	<0.1	0	
Pyrene	mg/kg	0.1										<0.1	<0.1	0	

*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: 100 (5-10 x EQL); 50 (10-3
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	Interlab_D	
			Field_ID	QC5A	**RPD**
			Sampled_Date-Time	28/07/2009	
Method_Type	**ChemName**	**Units**	**EQL**		
Cyanide	Cyanide Total	mg/kg	0.1 (Primary): 5 (Interlab		
Inorganics	pH (Field)	pH_Units	0		
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05 (Primary): 0.1 (Inter	<0.1	26
Metals in Soil by ICP-OES	Arsenic	mg/kg	3 (Primary): 2 (Interlab)	1800.0	6
	Cadmium	mg/kg	0.3 (Primary): 0.5 (Interla	14.0	15
	Chromium (III+VI)	mg/kg	0.3 (Primary): 5 (Interlab	25.0	17
	Copper	mg/kg	0.5 (Primary): 5 (Interlab	93.0	17
	Lead	mg/kg	1 (Primary): 5 (Interlab)	1600.0	0
	Nickel	mg/kg	0.5 (Primary): 5 (Interlab	17.0	6
	Zinc	mg/kg	0.5 (Primary): 5 (Interlab	2800.0	24
Moisture	Moisture	%	1		
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1		
	4,4-DDE	mg/kg	0.1 (Primary): 0.05 (Inter		
	a-BHC	mg/kg	0.1 (Primary): 0.05 (Inter		
	Aldrin	mg/kg	0.1 (Primary): 0.05 (Inter		
	b-BHC	mg/kg	0.1 (Primary): 0.05 (Inter		
	cis-Chlordane	mg/kg	0.1		
	d-BHC	mg/kg	0.1 (Primary): 0.05 (Inter		
	DDD	mg/kg	0.1 (Primary): 0.05 (Inter		
	DDT	mg/kg	0.1 (Primary): 0.05 (Inter		
	Dieldrin	mg/kg	0.1 (Primary): 0.05 (Inter		
	Endosulfan I	mg/kg	0.1 (Primary): 0.05 (Inter		
	Endosulfan II	mg/kg	0.1 (Primary): 0.05 (Inter		
	Endosulfan sulphate	mg/kg	0.1 (Primary): 0.05 (Inter		
	Endrin	mg/kg	0.1 (Primary): 0.05 (Inter		
	Endrin aldehyde	mg/kg	0.1 (Primary): 0.05 (Inter		
	Endrin ketone	mg/kg	0.1 (Primary): 0.05 (Inter		
	g-BHC (Lindane)	mg/kg	0.1 (Primary): 0.05 (Inter		
	Heptachlor	mg/kg	0.1 (Primary): 0.05 (Inter		
	Heptachlor epoxide	mg/kg	0.1 (Primary): 0.05 (Inter		
	Hexachlorobenzene	mg/kg	0.1 (Primary): 0.05 (Inter		
	Methoxychlor	mg/kg	0.1 (Primary): 0.05 (Inter		
	o,p'-DDD	mg/kg	0.1		
	o,p'-DDE	mg/kg	0.1		
	trans-chlordane	mg/kg	0.1		
	trans-Nonachlor	mg/kg	0.1		
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2		
	Bromophos-ethyl	mg/kg	0.2		
	Chlorpyrifos	mg/kg	0.2		
	Diazinon	mg/kg	0.5 (Primary): 0.2 (Interla		
	Dichlorvos	mg/kg	1 (Primary): 0.2 (Interlab		
	Dimethoate	mg/kg	1		
	Ethion	mg/kg	0.2		
	Fenitrothion	mg/kg	0.2		
	Malathion	mg/kg	0.2		
	Methidathion	mg/kg	0.5		
	Parathion	mg/kg	0.2		
PAHs in Soil	1-Methylnaphthalene	mg/kg	0.1		

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Field Duplicates (soil)
Filter: SDG in('SE71167','SE71036','SE70984','SE70874')

			SDG	Interlab_D	
			Field_ID	QC5A	RPD
			Sampled_Date-Time	28/07/2009	
	2-methylnaphthalene	mg/kg	0.1		
	Acenaphthene	mg/kg	0.1		
	Acenaphthylene	mg/kg	0.1		
	Anthracene	mg/kg	0.1		
	Benz(a)anthracene	mg/kg	0.1		
	Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.1 (Inter		
	Benzo(b)&(k)fluoranthene	mg/kg	0.2		
	Benzo(g,h,i)perylene	mg/kg	0.1		
	Chrysene	mg/kg	0.1		
	Dibenz(a,h)anthracene	mg/kg	0.1		
	Fluoranthene	mg/kg	0.1		
	Fluorene	mg/kg	0.1		
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		
	Naphthalene	mg/kg	0.1		
	PAHs (Sum of total)	mg/kg	1.75 (Primary): 0.1 (Inter		
	Phenanthrene	mg/kg	0.1		
	Pyrene	mg/kg	0.1		

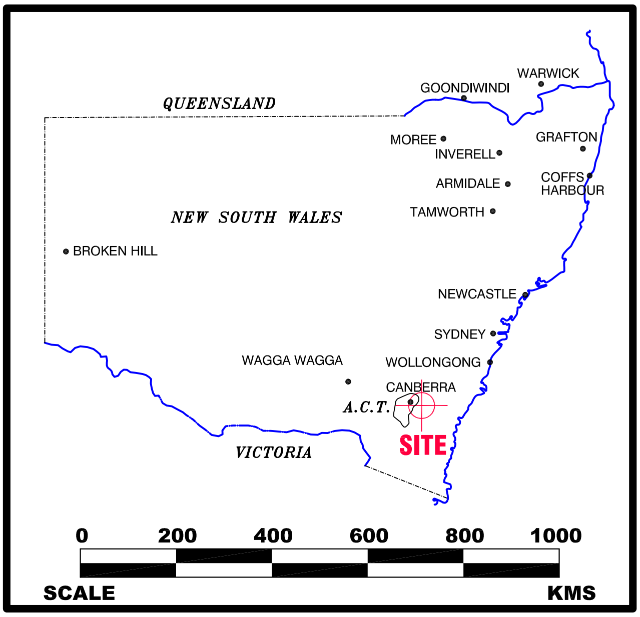
*RPDs have only been considered where a concentration is greater than 5 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (5-10 x EQL); 50 (10-3
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

FINAL D R A F T

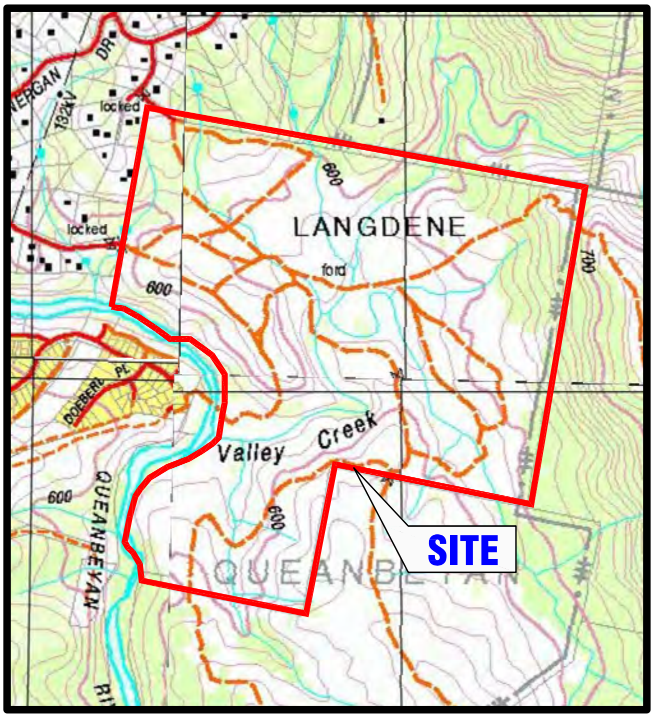
Figures

Stage 3 Contamination Assessment, Jumping Creek Queanbeyan, NSW

A4

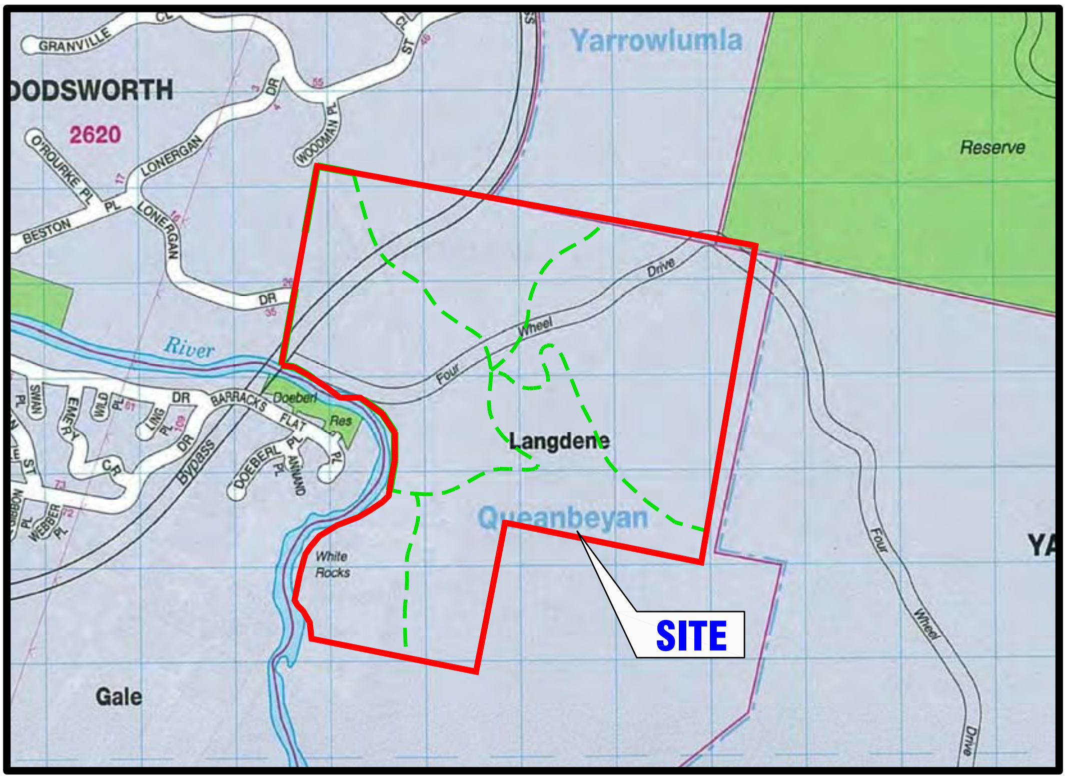


GENERAL AREA MAP



REGIONAL AREA MAP

SOURCE: TOPOVIEW RASTER VIEW 2009
CANBERRA, BUNGENDORE, TUGGERANONG & HOSKINGSTOWN



LOCAL AREA MAP

SOURCE: CANBERRA & QUEANBEYAN STREET DIRECTORY, EDITION 11TH, 2005, MAP: 82

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SPECIALISTS IN LIVING AND WORKING PLACES
2/54 Northbourne Avenue
Canberra ACT 2601
Ph: (02) 6248 7154
Fax: (02) 6248 7157

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

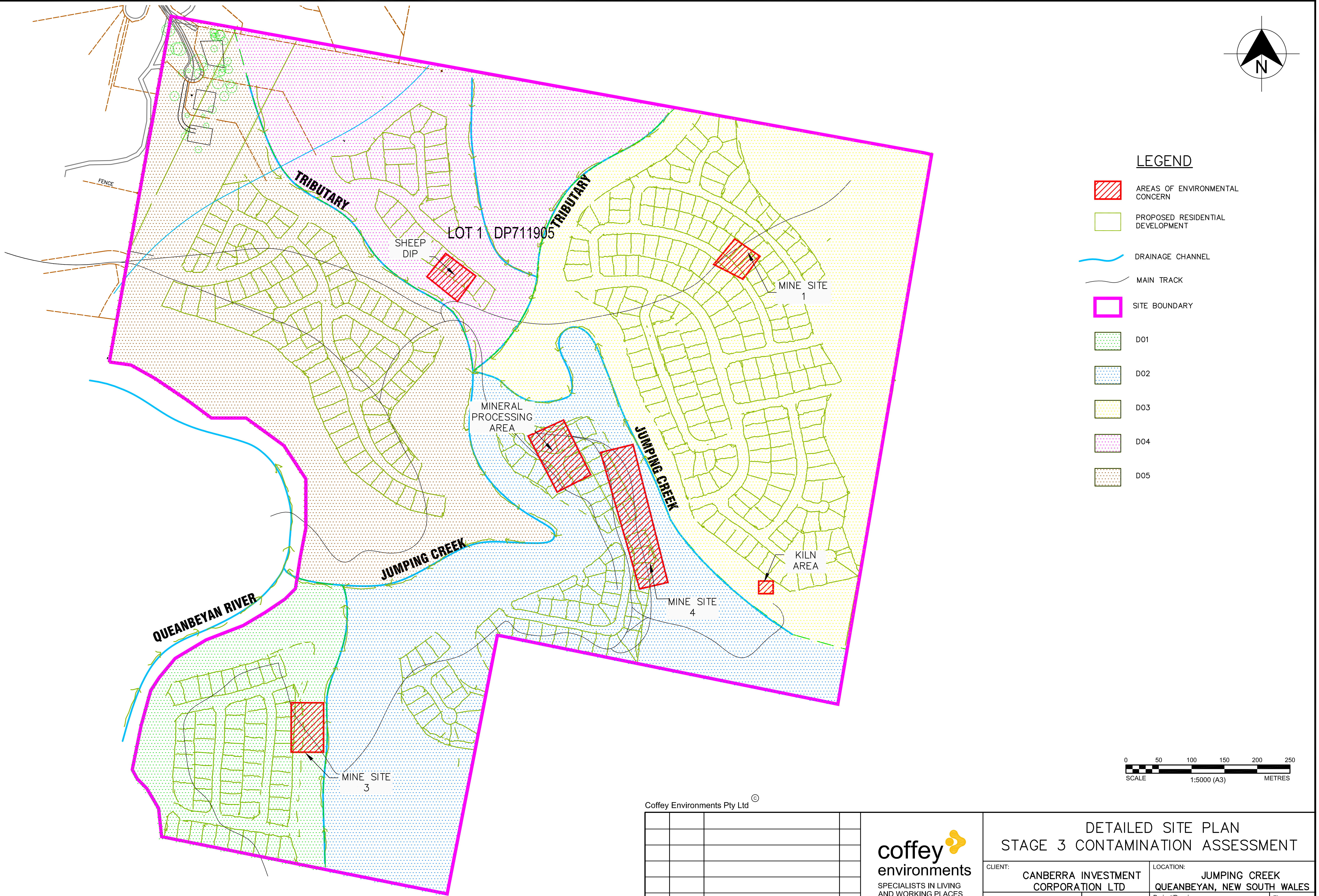
Drawing Title: **SITE LOCATION PLAN**

Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 200 400 600 800 1000 METRES 1:20 000 (A4)

Rev	Date	Revision Details	Drn
A	14.12.09	STAGE 3 CA	MV

Drawn	Date		
MV	14.12.09		
Project - Drawing No.	Figure No.	Rev.	
ENVICANB00233AA–D03	1	A	



ISSUE	DATE	AMENDMENTS	DRN
A	14.12.09	STAGE 3 CA	MV

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DETAILED SITE PLAN STAGE 3 CONTAMINATION ASSESSMENT

CLIENT: CANBERRA INVESTMENT CORPORATION LTD

LOCATION: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

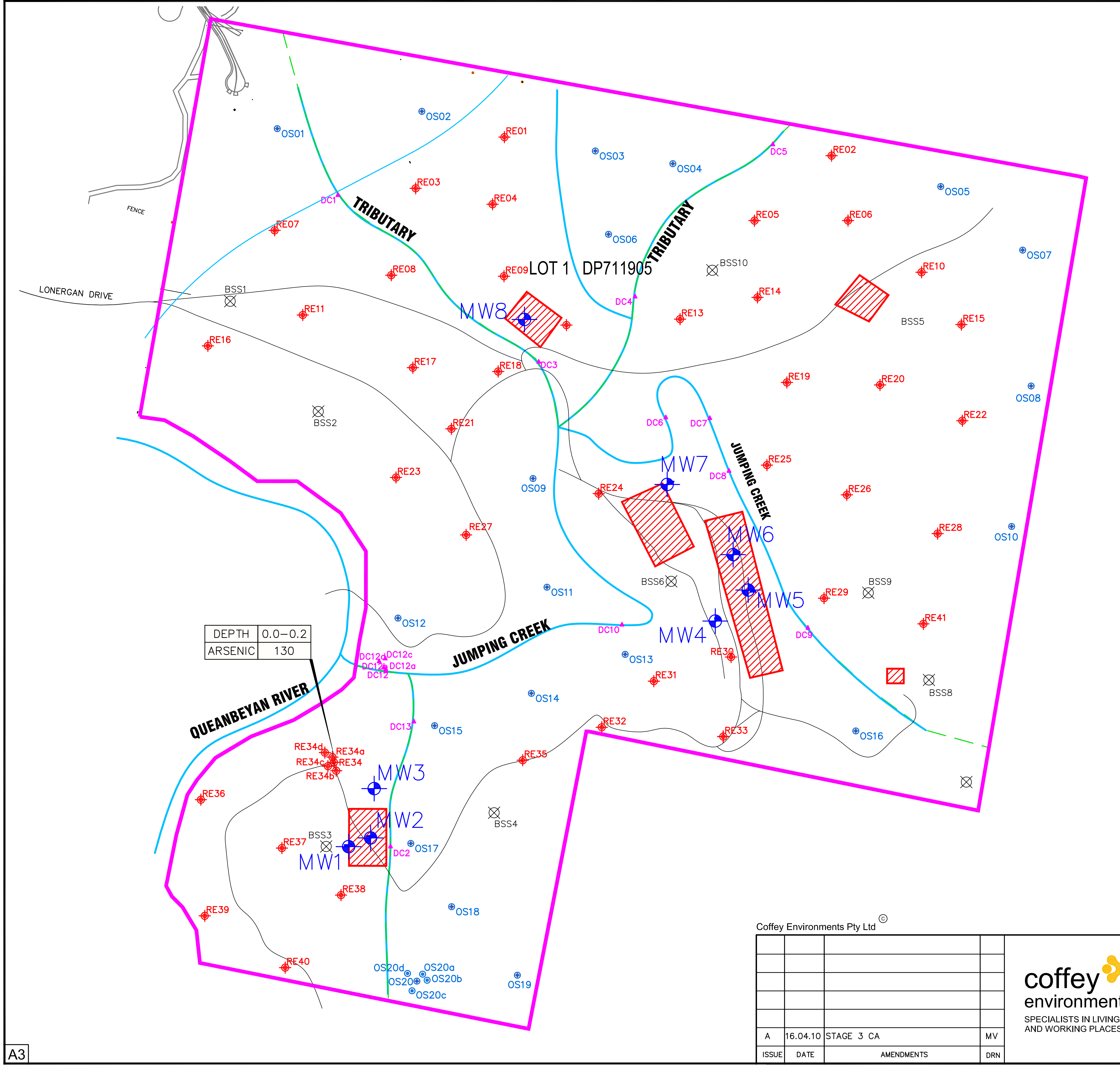
DESIGNED: CG | DATE: 14.12.09

DRAWN: MV | REV. NO: A

Project/Drawing: ENVICANB00233AA-D03

Figure: 2

A3



DEPTH	0.0–0.2
ARSENIC	130

LEGEND

- AREAS OF ENVIRONMENTAL CONCERN
- MAIN TRACK
- MAIN DRAINAGE CHANNEL
- RE — RESIDENTIAL SAMPLE LOCATIONS
- OS — OPEN SPACE SAMPLE LOCATIONS
- PREVIOUS SAMPLE LOCATION (IT ENVIRONMENTAL)
- DC — DRAINAGE CHANNEL SAMPLE LOCATIONS
- SITE BOUNDARY

DEPTH	(Meter)
ARSENIC	(mg/kg)

mg/kg MILLIGRAMS PER KILOGRAM

NOTE:
* ONLY ANALYTICAL RESULTS WITH ANALYTES ABOVE HILs EXCEEDANCES ARE SHOWN.

POINT ID	EASTING	NORTHING	RL TOP WELL	RL GROUND
MW1	704497.554	6082645.556	591.52	590.79
MW2	704526.683	6082657.272	586.77	586.16
MW3	704531.367	6082722.461	582.13	581.40
MW4	704983.049	6082944.276	600.60	600.02
MW5	705026.493	6082985.357	590.69	591.19
MW6	705006.635	6083032.254	588.41	587.76
MW7	704919.309	6083125.160	585.63	585.07
MW8	704730.347	6083343.625	594.59	593.83

0 50 100 150 200 250
SCALE 1:5000 (A3) METRES

ISSUE	DATE	AMENDMENTS	DRN
A	16.04.10	STAGE 3 CA	MV

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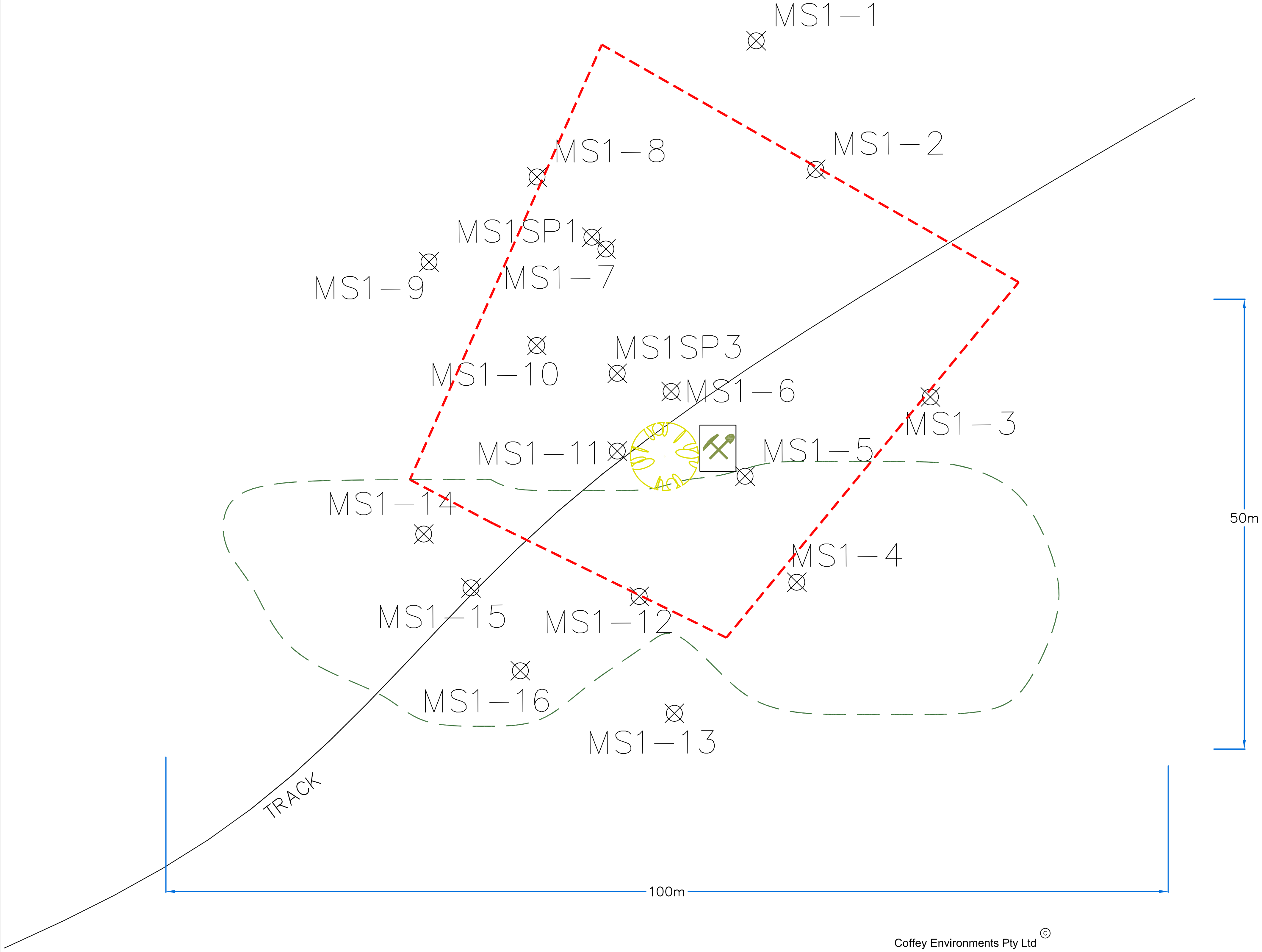
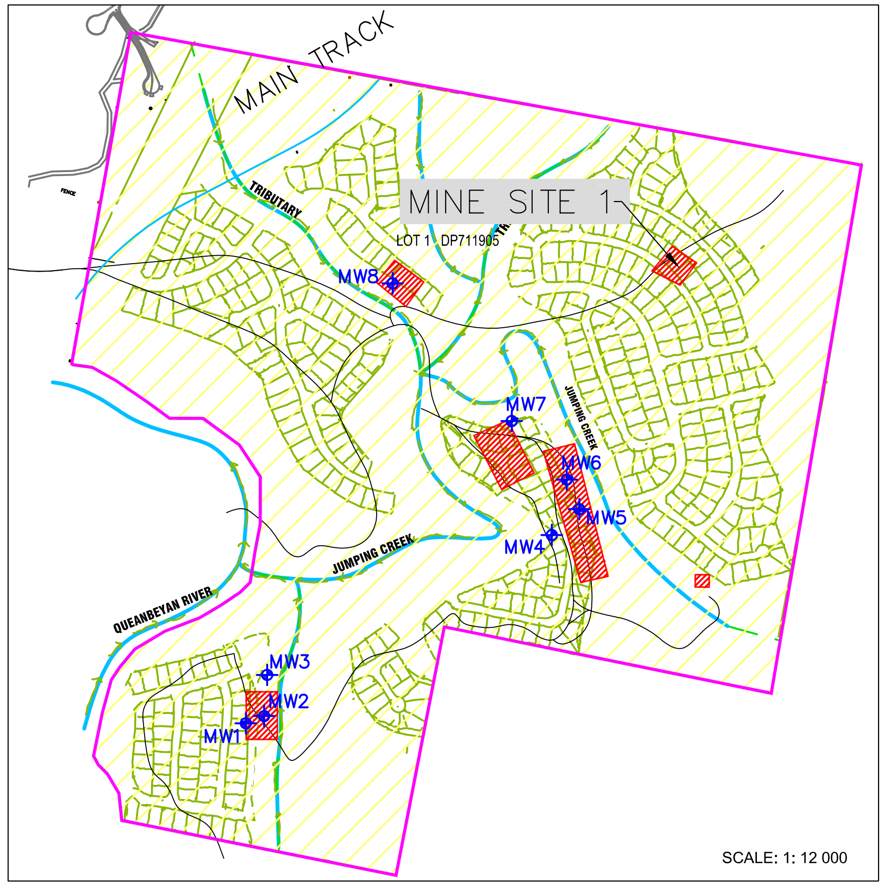
RESIDENTIAL, OPEN SPACE & DRAINAGE CHANNEL SAMPLING PLAN
STAGE 3 CONTAMINATION ASSESSMENT

CLIENT: CANBERRA INVESTMENT CORPORATION LTD
LOCATION: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

DESIGNED: CG | DATE: 16.04.10 | Project/Drawing: ENVICANB00233AA–D03 | Figure: 3
DRAWN: MV | REV. NO: A

A3





N

LEGEND

- MAIN DRAINAGE CHANNEL
- MAIN TRACK
- AREAS OF ENVIRONMENTAL CONCERN
- MS1 MINE SITE 1 SAMPLE LOCATIONS
- MINE SHAFT

NOTE:
* ONLY ANALYTICAL RESULTS WITH ANALYTES ABOVE HILs EXCEEDANCES ARE SHOWN.

0 5 10 15 20 25
SCALE 1:500 (A3) METRES

ISSUE	DATE	AMENDMENTS	DRN
A	16.04.10	STAGE 3 CA	MV

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MINE SITE 1 AND KILN AREA SAMPLING PLAN
– STAGE 3 CONTAMINATION ASSESSMENT

CLIENT: CANBERRA INVESTMENT CORPORATION LTD

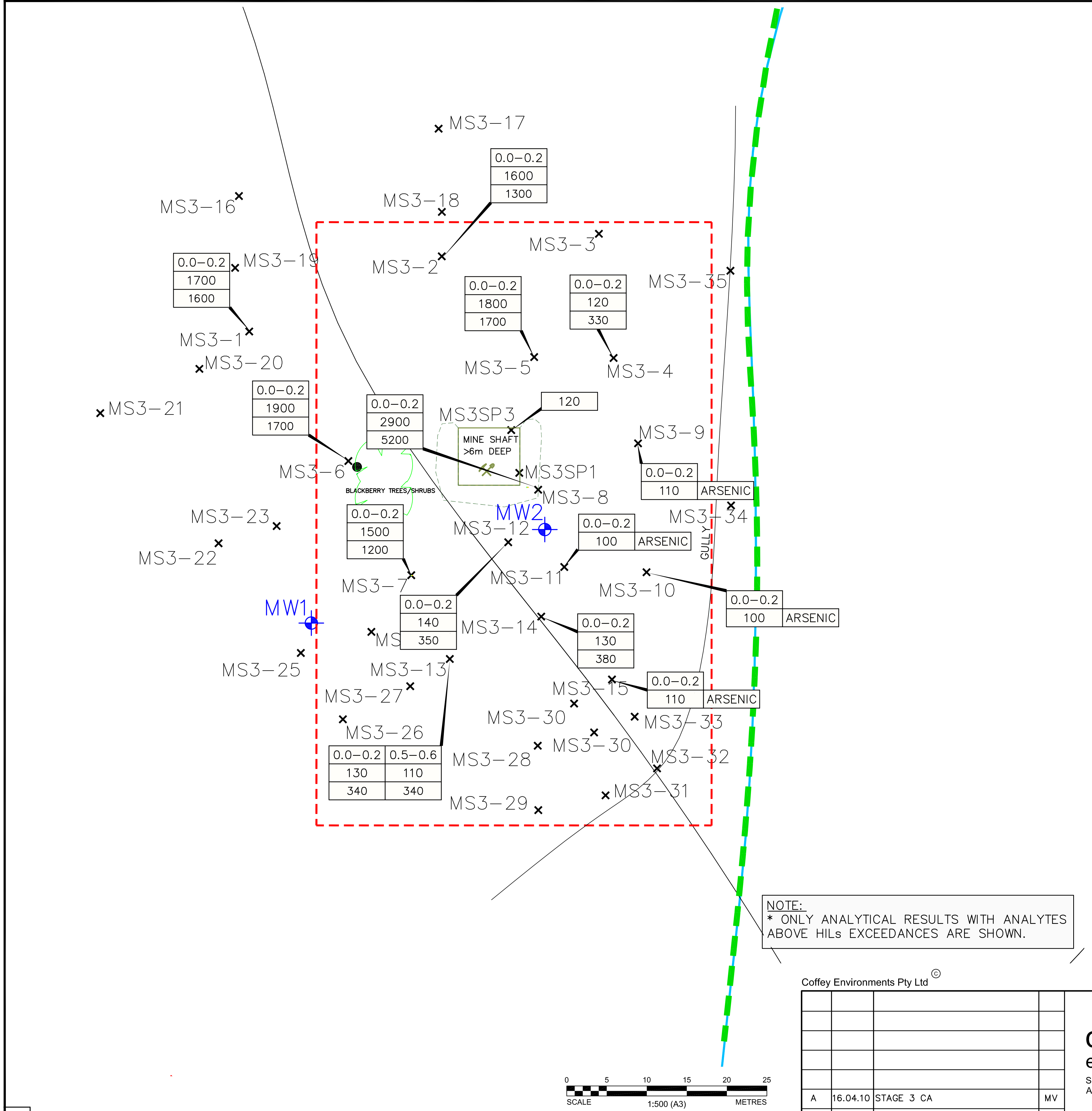
LOCATION: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

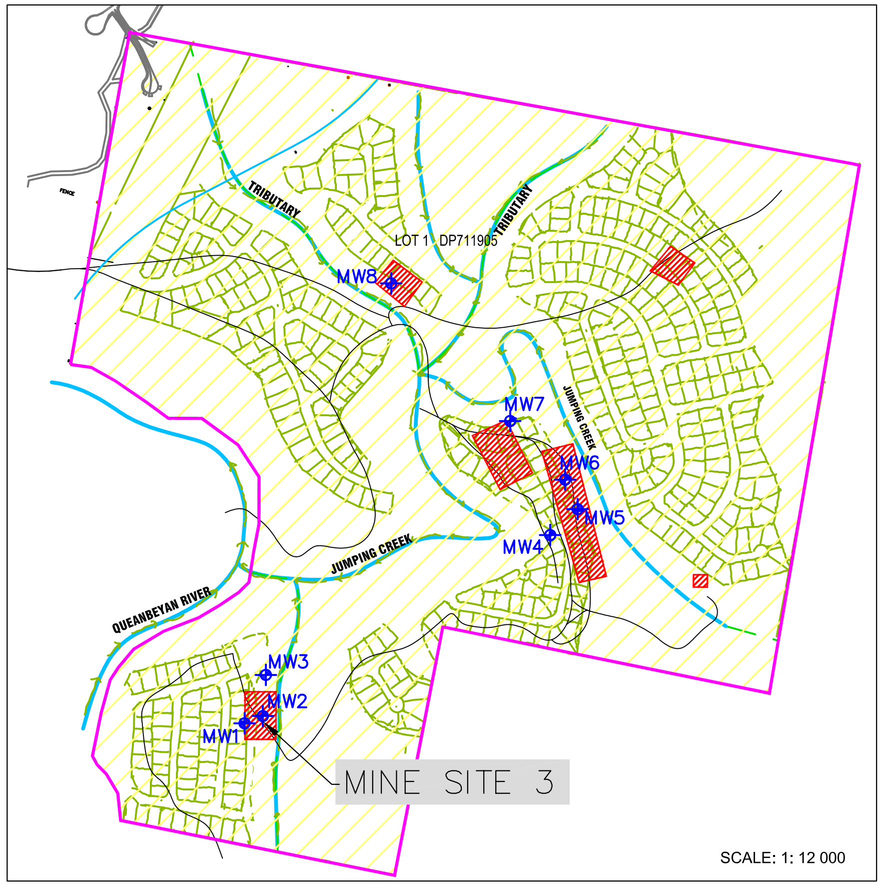
DESIGNED: CG | DATE: 16.04.10
DRAWN: MV | REV. NO: A

Project/Drawing: ENVICANB00233AA-D03

Figure: 4

A3





LEGEND

- MAIN DRAINAGE CHANNEL
- MAIN TRACK
- DOMAIN OF INTEREST BOUNDARY
- AREAS OF ENVIRONMENTAL CONCERN
- MW — GROUNDWATER MONITORING WELL LOCATIONS
- MS3 × — MINE SITE 3 SAMPLE LOCATIONS <HILA (METALS), >HILA
- STOCKPILE
- MINE SHAFT

DEPTH	(Meter)
ARSENIC	(mg/kg)
LEAD	(mg/kg)

mg/kg MILLIGRAMS PER KILOGRAM

NOTE:
* ONLY ANALYTICAL RESULTS WITH ANALYTES ABOVE HILs EXCEEDANCES ARE SHOWN.

ISSUE	DATE	AMENDMENTS	DRN
A	16.04.10	STAGE 3 CA	MV

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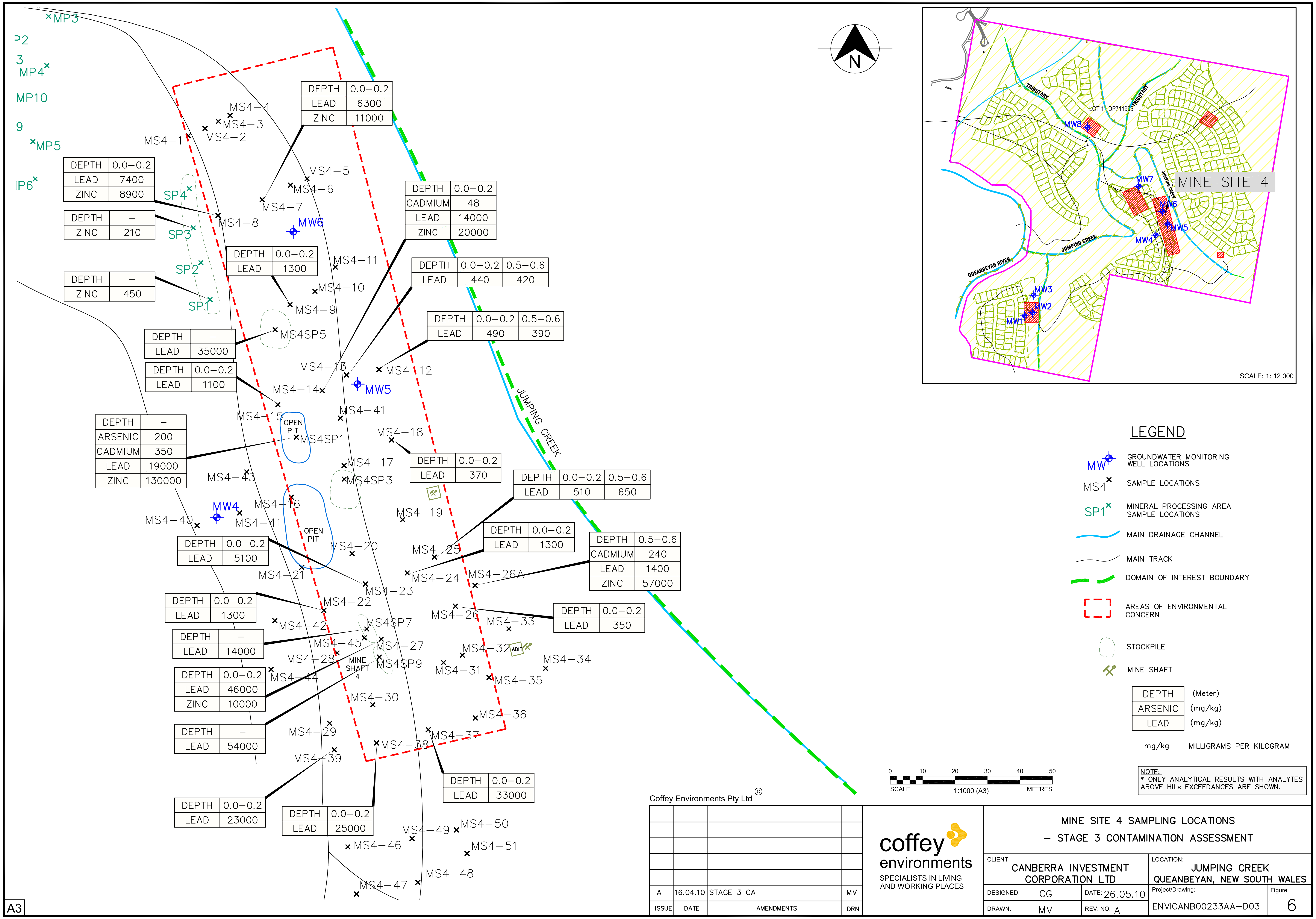
MINE SITE 3 SAMPLING LOCATIONS
– STAGE 3 CONTAMINATION ASSESSMENT

CLIENT:	CANBERRA INVESTMENT CORPORATION LTD
LOCATION:	JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES
DESIGNED:	CG
DATE:	26.05.10
DRAWN:	MV
REV. NO:	A
Project/Drawing:	ENVICANB00233AA−D03
Figure:	5

A3



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ISSUE	DATE	AMENDMENTS	DRN
A	16.04.10	STAGE 3 CA	MV

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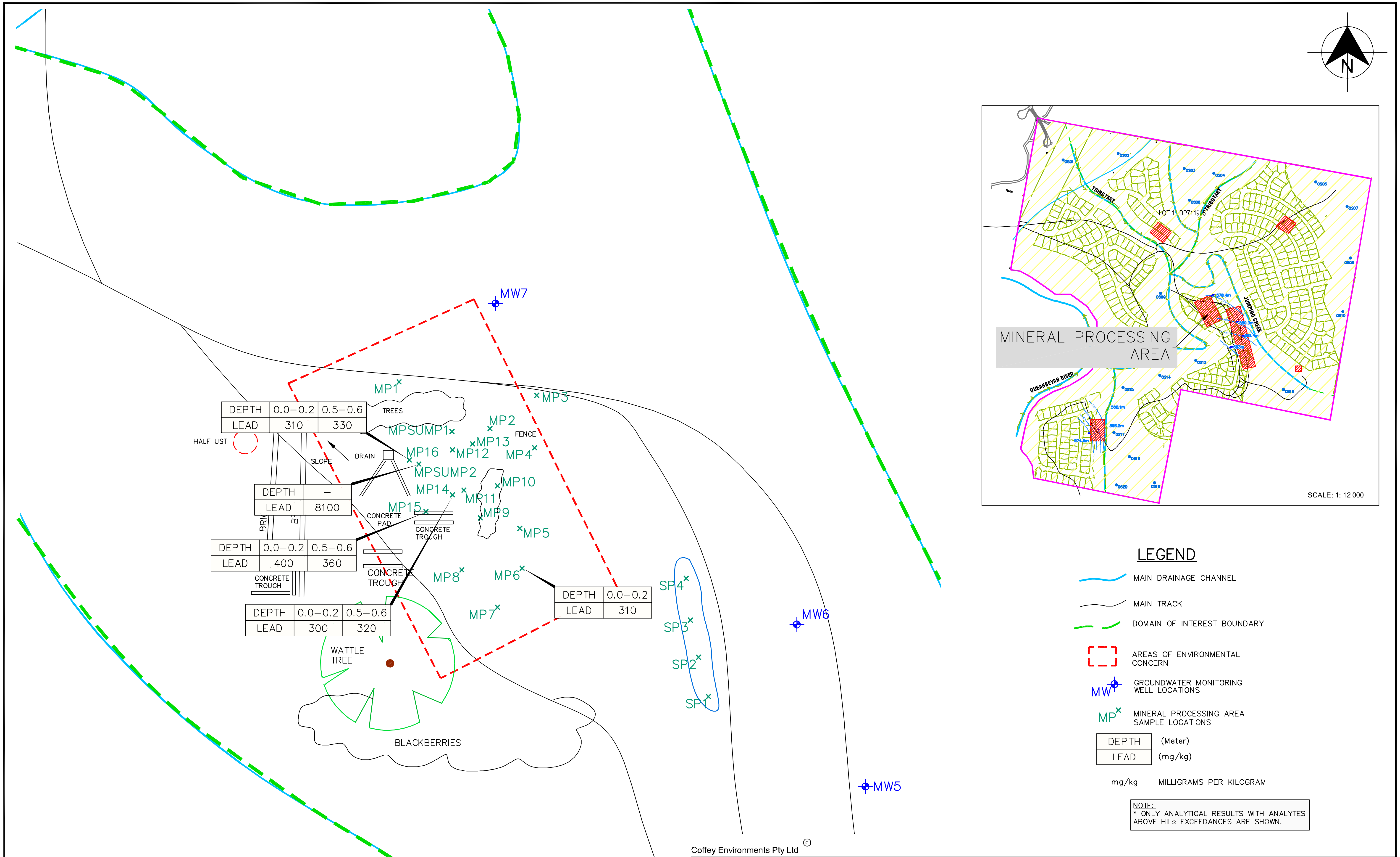
MINE SITE 4 SAMPLING LOCATIONS
– STAGE 3 CONTAMINATION ASSESSMENT

CLIENT: CANBERRA INVESTMENT CORPORATION LTD
LOCATION: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

DESIGNED: CG
DATE: 26.05.10
DRAWN: MV
REV. NO: A
Project/Drawing: ENVICANB00233AA-D03
Figure: 6

A3



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ISSUE	DATE	AMENDMENTS	DRN
A	16.04.10	STAGE 3 CA	MV

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MINERAL PROCESSING AREA SAMPLING LOCATIONS – STAGE 3 CONTAMINATION ASSESSMENT

CLIENT: CANBERRA INVESTMENT CORPORATION LTD

LOCATION: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

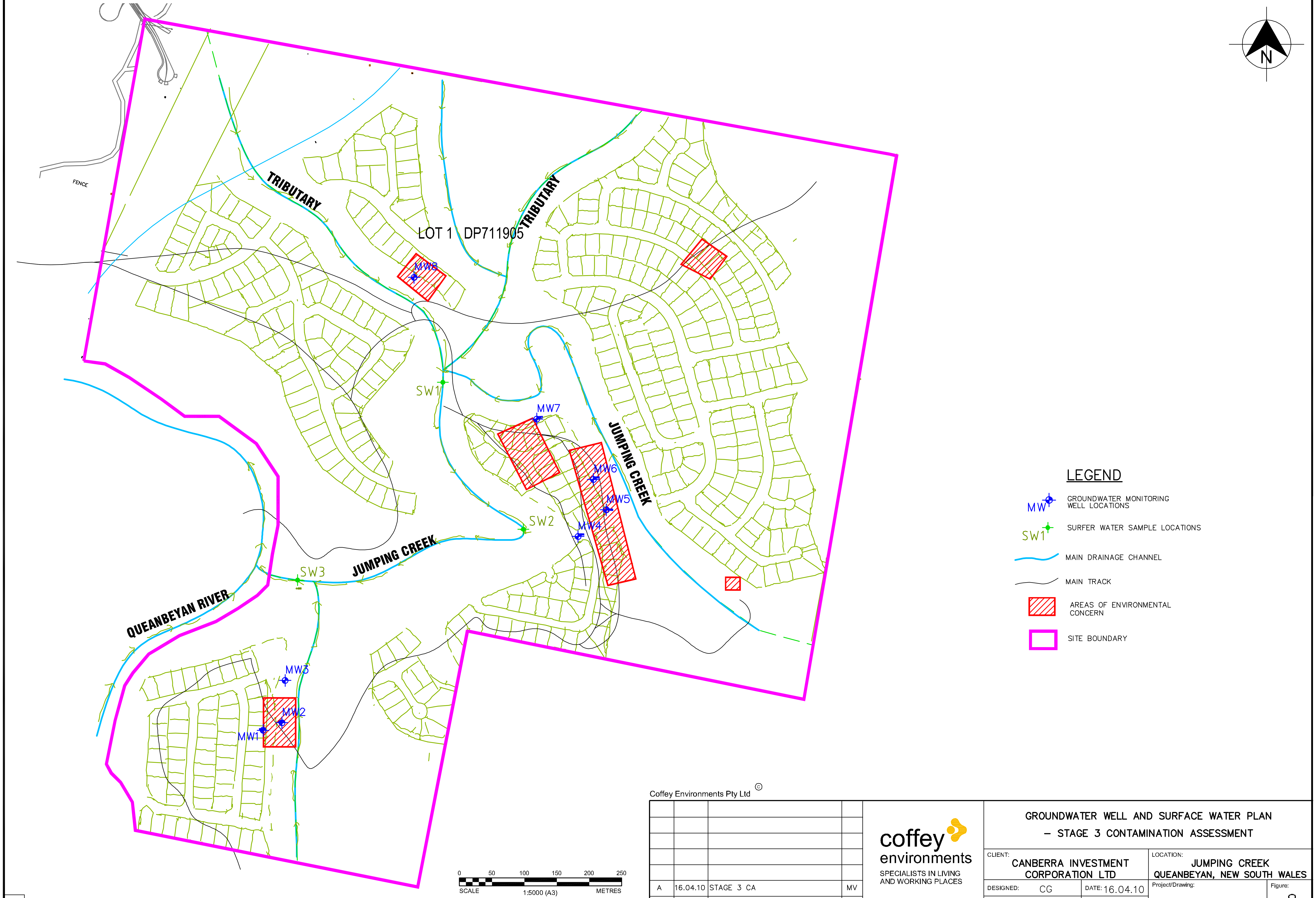
DESIGNED: CG DATE: 16.04.10

DRAWN: MV REV. NO: A

Project/Drawing: ENVICANB00233AA–D03

Figure: 7

A3



LEGEND

MW	GROUNDWATER MONITORING WELL LOCATIONS
SW1	SURFER WATER SAMPLE LOCATIONS
	MAIN DRAINAGE CHANNEL
	MAIN TRACK
	AREAS OF ENVIRONMENTAL CONCERN
	SITE BOUNDARY

ISSUE	DATE	AMENDMENTS	DRN
A	16.04.10	STAGE 3 CA	MV

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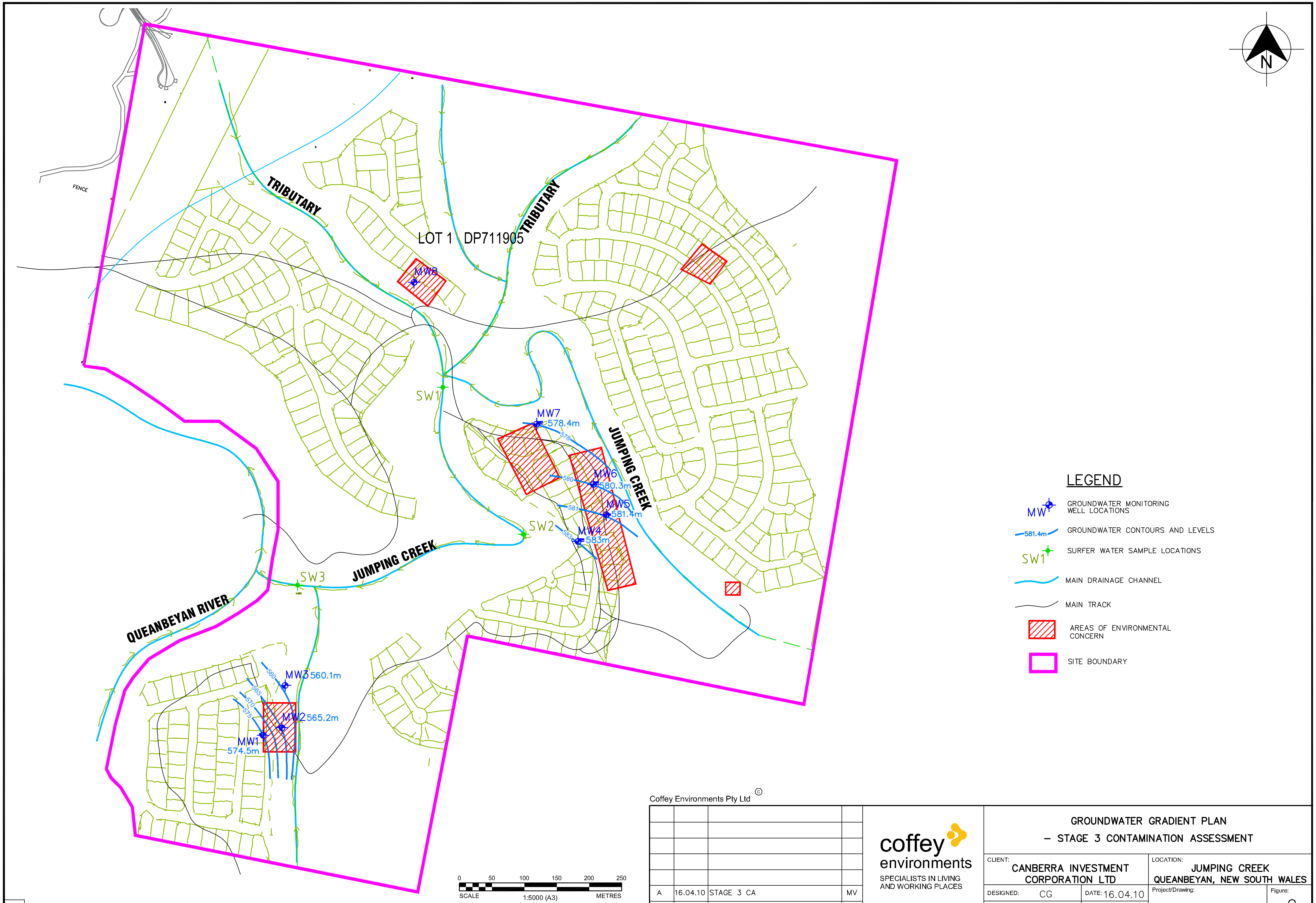
GROUNDWATER WELL AND SURFACE WATER PLAN – STAGE 3 CONTAMINATION ASSESSMENT

CLIENT: CANBERRA INVESTMENT CORPORATION LTD

LOCATION: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

DESIGNED: CG
DRAWN: MV
DATE: 16.04.10
REV. NO: A
Project/Drawing: ENVICANB00233AA-D03
Figure: 8

A3



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ISSUE	DATE	AMENDMENTS	DRN
A	16.04.10	STAGE 3 CA	MV

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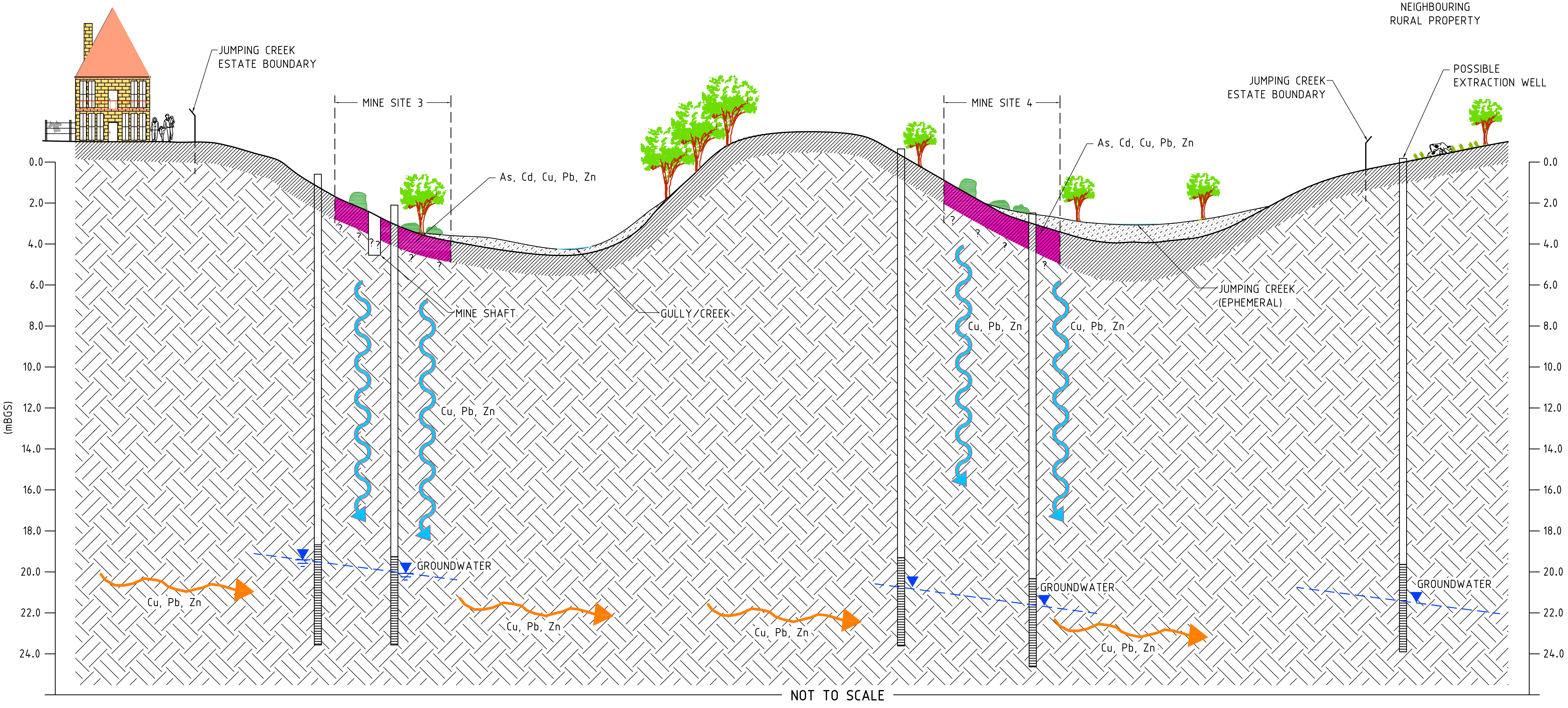
GROUNDWATER GRADIENT PLAN
– STAGE 3 CONTAMINATION ASSESSMENT

CLIENT: CANBERRA INVESTMENT CORPORATION LTD
LOCATION: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES
DESIGNED: CG DATE: 16.04.10
DRAWN: MV REV. NO: A
Project/Drawing: ENVICANB00233AA–D03
Figure: 9

A3

CONCEPTUAL SITE MODEL



LEGEND

- 'DELINEATED' AREA OF CONTAMINATION
- ALLUVIAL DEPOSITS: SILTY SAND/CLAYEY SAND, SOME GRAVELS (<1.5mBGS)
- WASTE/TAILINGS PILES
- SKELETAL/RESIDUAL SOILS: CLAYEY SANDS/GRAVELLY CLAYEY SANDS (<2mBGS)
- BEDROCK: SANDSTONE/SILTSTONE/SHALE

drawn	CGT
approved	
date	11.06.10
scale	AS SHOWN
original size	A3

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SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

client:	CANBERRA INVESTMENT CORPORATION LTD
project:	JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES
title:	CONCEPTUAL SITE MODEL
project no: ENVICANB00233AA	figure no: FIGURE 10

Appendix A
Sampling Analysis and Quality Plan

Stage 3 Contamination Assessment,
Jumping Creek Queanbeyan, NSW

A1. DATA QUALITY OBJECTIVES – SAMPLING

These data quality objectives (DQOs) are applicable for the sampling within the site (defined as area shown on Figure 2). DQOs have been developed in accordance with the seven step process outlined in AS4482.1-1997 and NSW DEC (2006).

Step 1 – State the Problem

The primary objectives were to:

- Assess the contamination status of the site and suitability of the site for the proposed medium density residential apartments; and
- Assess the likely waste classification for soils to be excavated and disposed offsite, predominantly in the vicinity of the PAH hotspot, stockpiles onsite and asbestos containing fill materials in the McElhone Street Terrace;

The main problems are:

- How many soil samples should be collected?
- What sample layout should be used to achieve the above objectives?
- What analytes should be tested?

Step 2 – Identify the Decision

- Is the area within the site suitable for the proposed land use?
- What waste classification type is applicable for materials stockpiled onsite and soils beneath the site that are likely to be excavated and disposed offsite?

Step 3 – Identify Inputs to the Decision

The primary inputs to assessing the above include:

- The findings of the previous Stage 1 Preliminary Environmental Site Assessment carried out on the subject site including site history information and site observations;
- Additional data collected by Coffey as part of this assessment including field measurements, observations and laboratory analytical results;
- Outcome of quality assurance assessment from relevant data; and
- Applicable NSW EPA / DECC Guidelines.

Step 4 – Define the Study Boundaries

The study boundary is defined as the southern portion of Lot 60 of DP619268, which is bounded by Reid Avenue to the south, Dowling street to the west and McElhone Street to the East (see figure 2).

Vertically the study boundary is to a maximum depth of 3.3 m below the current ground level (the deepest fill encountered on the site).

Step 5 – Develop a Decision Rule

Potential chemicals of concern are listed in Section 4.2 of the main text.

The decision rule for soil for each Contaminant of Potential Concern (COPCs) will be as follows:

- QA / QC assessment for COPCs indicates data usable;
- Where concentrations for each sample are below the investigation level then no further assessment is required with respect to that chemical for site suitability purposes;
- Where there are one or more exceedances of the health-based investigation level (HIL), then:

- If the 95% upper confidence level (UCL) of the concentrations for each chemical / soil unit / area is below the HIL, and no individual concentration exceeds the HIL by a factor of greater than 2.5, and the standard deviation of the concentrations for each chemical / soil unit / area is below 50% of the HIL then no further assessment / remediation will be required with respect to that chemical / soil unit / area; and
- Where the 95% UCL of the concentrations for any chemical / soil unit / area exceeds the HIL, or one or more individual concentrations exceed the HIL by a factor of greater than 2.5, or the standard deviation of the concentrations for each chemical / soil unit / area exceeds 50% of the HIL, then further assessment / remediation may be required, with respect to that chemical / soil unit / area.

  - The decision rule for soil for each chemical / layer to assess the suitability of the soil for offsite disposal to landfill will be in accordance with the NSW DEC (2008) *Waste Classification Guidelines Part 1: Classifying Waste*.

Step 6 – Specify Acceptable Limits on Decision Errors

There are two types of error for site suitability assessment purposes:

1. Deciding that the site is acceptable when it is actually not.
2. Deciding that the site is unacceptable when it is.

- For waste classification, the error in the assessment will involve the error in determining the type of waste and the error in the laboratory analytical results in the concentration of analytes.

The assessment will aim with a 95% confidence level to conclude that the subject site is suitable for the proposed use and for waste classification purposes. For this reason, the 95% UCL will be used to assess the mean.

Step 7 – Optimise the Design for Obtaining Data

The samples will target the areas identified with potential contamination issues based on site history and previous assessment. Random samples will be collected and samples will also be collected from material where evidence of visual or olfactory contamination is identified.

A2. Data Quality Indicators

The following sections present the DQIs that have been used to assess the quality of the data.

DATA COMPLETENESS

Field Considerations

	Yes / No	Comments
Were all critical locations sampled?	No	During field investigations, the client requested Coffey to complete works on site by 1:30pm to minimise public attention. As a result test pit location TP5 was not progressed through to natural soil and location TP6 was not progressed into subsurface fill material.
Were the SOPs appropriate and complied with?	Yes	Coffey Environments Standard Operating Procedure (SOP) was consistent with relevant guidelines and was complied with by field staff.
Was the sampler adequately experienced?	Yes	Samples were collected by trained and appropriately experienced staff members from Coffey Environments.
Was the field documentation complete?	Yes	Daily field logs and records were compiled on-site by the Coffey Environments staff member. Samples selected for analysis were scheduled on the chain of custody (COC).
Is a copy of the signed chain of custody form for each batch of samples included?	Yes	Copies are included in Appendix D.

Laboratory Considerations

	Yes / No	Comment
Were all samples analysed according to sampling plan?	Yes	• Samples were analysed according to the plan.
Were the laboratory methods appropriate?	Yes	Methods used were the recommended industry methods / standards.
Was the laboratory methods adopted NATA endorsed?	Yes	Laboratories used and their methods were NATA accredited / endorsed.
Was the NATA Seal on the laboratory reports?	Yes	

	Yes / No	Comment
Were the laboratory reports signed by an authorised person?	Yes	All laboratory reports were signed by authorised signatories using electronic signatures.
Were the laboratory LORs below the criteria?	Yes	
Was sample documentation complete?	Yes	COCs were filled out correctly at time of dispatch and receipt; they were included with the sample receipt and analysis reports provided by the laboratories.
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	The soil assessment was conducted on the 29 July 2009. The soil samples were submitted for laboratory analysis in one batch.
Were the same sampling methodology and SOPs used for all sampling?	Yes	Samples were collected from a backhoe bucket, using clean disposable nitrile gloves. All sampling followed the respective Coffey Environments SOPs.
Was all sampling undertaken by the same sampler?	Yes	All samples were collected by Fernando Velesquez during the July 2009 sampling. Coffey Environments SOPs for soil sampling were followed during the works.
Were sample containers, preservation, filtering the same?	Yes	Containers used were supplied by the corresponding laboratories to provide appropriate sample storage. Samples were immediately placed into a chilled (approximately 4^{o}C) cooler.
Could climatic conditions (temperature, rainfall, wind) have influenced data comparability?	No	Coffey considers that the climatic condition experienced over the sampling period is unlikely to have affected the data. Samples were collected quickly and placed immediately in an ice filled cooler.
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?	yes	Analytical methods were the same between laboratories.
Were the LORs the same?	No	LORs were generally the same, with the exception of some chemicals (e.g. BTEX between laboratories). Given the LORs were well below the HIL, it is considered that the different PQLs were unlikely to change the conclusion

	Yes / No	Comment
		of this report.
Were the same laboratories used?	Yes	SGS Laboratories in Sydney were used for the primary sample analysis and Envirolab in Sydney were used for inter-laboratory samples. Both are NATA accredited laboratories.
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	
Were all media identified sampled?	Yes	
Were the samples properly and adequately preserved? This includes keeping the samples chilled, where applicable.	Yes	Samples were immediately placed in ice chilled cooler boxes for transport, under COC conditions. Sample jars were sealed, with minimal remaining headspace. Samples were analysed within the recommended holding times. Samples were received at the laboratories in a chilled condition.
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 sample receipts are included in Appendix D.

REPRESENTATIVENESS CONCLUSION

	Yes / No	Comment
Was data adequately representative?	Yes	Coffey is of opinion that the data was adequately representative for the objective of the works.

DATA PRECISION AND ACCURACY

Field considerations

	Yes / No	**Comment**
Were the SOPs appropriate and complied with?	Yes	

Field QA/QC

	Yes / No	**Comment**
Were an adequate number of field duplicates analysed?	Yes	During the field works program, field intra-laboratory duplicates were analysed at a rate of approximately 1 in 8 samples (12.5%) and field inter-laboratory duplicates were analysed at a rate of approximately 1 in 16 samples (6.25%) per batch. There are a total of 16 primary samples, 2 intralaboratory duplicates, and 1 interlaboratory duplicates. This is considered adequate.
Were the RPDs of the field duplicates within control limits?	See Comments	Only total phenolics had RPDs in excess of the 50% control limit. This is not considered to affect the findings of this report.
Were an adequate number of trip blanks and trip spikes analysed?	Yes	One trip blank sample was collected. A trip spike was not collected during the assessment however this is considered to be adequate for this assessment.
Were an adequate number of wash blanks analysed?	N/A	Only disposable equipment came into contact with samples.
Lab QA/QC		
Were an adequate number of laboratory blank samples analysed?	Yes	See batch summary tables. One laboratory blank sample per batch was generally analysed for the contaminant(s) analysed in the batch.
Were the blanks free of contaminants?	Yes	Analytical results for blank samples were below LOR.

Were an adequate number of laboratory matrix spikes and laboratory control samples analysed?	Yes	See batch summary tables. One laboratory matrix spike and laboratory control sample per batch were generally analysed for the contaminant(s) analysed in the batch.
Were an adequate number of surrogate spike samples analysed?	Yes	See batch summary tables. Surrogate spikes were analysed as appropriate according to laboratory methods.
Were the spikes recoveries within control limits?	See Comments	Chloroform returned a recovery of 65% acceptable percent is 70%
Were an adequate number of laboratory duplicates analysed?	Yes	
Were the RPDs of the laboratory duplicates and other quality control methods within control limits?	Yes	

PRECISION AND ACCURACY CONCLUSION

	Yes / No	Comment
Was data adequately precise and accurate?	Yes	Overall, Coffey considers that the data were adequately precise and accurate for the objective of the works.

Appendix B
Laboratory Certificates

**Stage 3 Contamination Assessment,
Jumping Creek Queanbeyan, NSW**

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Chain of Custody

No: 26351

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 1 of 2

Dispatch to: (Address & Phone No.) [redacted] SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 23/7/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Gunton	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	23/7/09	4:30pm	David	24/7/09	

Comments	Sample Matrix	Container Type and Preservative		Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: 8	OCP/OPP	Sample Condition on Receipt
	Soil	250ml Jar	1	RE02-0.0-0.2	23/7/09				X	X	
			2	RE05-0.0-0.2					X		
			3	RE06-0.0-0.2					X		
			4	RE10-0.0-0.2					X	X	
			5	RE13-0.0-0.2					X		
			6	RE14-0.0-0.2					X		
			7	RE14-0.5-0.6					X		
			8	RE15-0.0-0.2					X	X	
			9	RE19-0.0-0.2					X		
			10	RE19-0.5-0.6					X		
			11	RE20-0.0-0.2					X	X	
			12	RE20-0.5-0.6					X		
			13	RE22-0.0-0.2					X		
			14	RE26-0.0-0.2					X		
			15	RE26-0.5-0.6					X		
			16	RE28-0.0-0.2					X	X	
			17	RE28-0.5-0.6					X		

SGS
Received 24/7/09
By D
Time 9
Samples intact
Ice/Cooler Pack
Temperature on Receipt 6 °C
Storage Location S627-628, W183-184
SGS REF No 70874

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results

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Chain of Custody

No: 26352

Laboratory Quotation / Order No:

Job No: ECOO233AA Sheet 2 of 2

Dispatch to: (Address & Phone No.) [redacted] SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 23/7/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Cantan	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	23/7/09	4:30pm	David	24/7/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs [redacted]	[redacted] + BTEX	Metals: 8	OCP/OPP	Sample Condition on Receipt
	Soil	250ml Jar	OS05-0.0-0.2 18	23/7/09				X	X	
			OS07-0.0-0.2 19					X		
			OS08-0.0-0.2 20					X		
			OS10-0.0-0.2 21					X	X	
			QC1 22					X	X	
	Water	Vial	TB1 23				X			
		1Amber, 1Metals, 2Vials	WB1 24					X	X	
		Vial	TS1 25				X			

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results

SAMPLE RECEIPT ADVICE (SRA)

24 July 2009

Client Details			**Laboratory Details**		
Requested By	:	**Chris Gunton**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Chris Gunton	Manager	:	Edward Ibrahim
Address	:	2/54 Northbourne Avenue PO Box 1986 CANBERRA ACT 2602	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	chris_gunton@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE70874**
Order Number	:	26351-26352	No. of Samples	:	25
Samples	:	22 Soils, 3 Waters	Due Date	:	31/07/2009

Date Instructions Received	:	24/07/2009
Sample Receipt Date	:	24/7/09

Samples received in good order	:	YES	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice Pack
Sample containers provided by	:	Other Lab	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liablility and to the clauses of indemnification.

The signed chain of custody will be returned to you with the original report.

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE70874
Project	:	EC00233AA			

Summary of Samples and Requested Analysis

The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.

Please indicate ASAP if your request differs from these details.

Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.

Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep & Inorganics - All	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Moisture
1	RE02_0.0-0.2	x	X	X	X	X						X
2	RE05_0.0-0.2	x			X	X						X
3	RE06_0.0-0.2	x			X	X						X
4	RE10_0.0-0.2	x	X	X	X	X						X
5	RE13_0.0-0.2	x			X	X						X
6	RE14_0.0-0.2	x			X	X						X
7	RE14_0.5-0.6	x			X	X						X
8	RE15_0.0-0.2	x	X	X	X	X						X
9	RE19_0.0-0.2	x			X	X						X
10	RE19_0.5-0.6	x			X	X						X
11	RE20_0.0-0.2	x	X	X	X	X						X
12	RE20_0.5-0.6	x			X	X						X
13	RE22_0.0-0.2	x			X	X						X
14	RE26_0.0-0.2	x			X	X						X
15	RE26_0.5-0.6	x			X	X						X
16	RE28_0.0-0.2	x	X	X	X	X						X
17	RE28_0.5-0.6	x			X	X						X
18	OS05_0.0-0.2	x	X	X	X	X						X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE70874
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Moisture
19	OS07_0.0-0.2	x			X	X						X
20	OS08_0.0-0.2	x			X	X						X
21	OS10_0.0-0.2	x	X	X	X	X						X
22	QC1	x	X	X	X	X						X
23	TB1						X					
24	WB1	x						X	X	X	X	
25	TS1						X					

Sample No.	Description
1	RE02_0.0-0.2
2	RE05_0.0-0.2
3	RE06_0.0-0.2
4	RE10_0.0-0.2
5	RE13_0.0-0.2
6	RE14_0.0-0.2
7	RE14_0.5-0.6
8	RE15_0.0-0.2
9	RE19_0.0-0.2
10	RE19_0.5-0.6
11	RE20_0.0-0.2
12	RE20_0.5-0.6

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE70874
Project : EC00233AA

Sample No.	Description
13	RE22_0.0-0.2
14	RE26_0.0-0.2
15	RE26_0.5-0.6
16	RE28_0.0-0.2
17	RE28_0.5-0.6
18	OS05_0.0-0.2
19	OS07_0.0-0.2
20	OS08_0.0-0.2
21	OS10_0.0-0.2
22	QC1
23	TB1
24	WB1
25	TS1

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Chain of Custody

No: 26354

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 1 of 6

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Cam Benson Date Dispatched: 28/7/09
Attention: Sample Receipts	Project Manager (report results to): Chris Gordon	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	28/7/09	5:00pm	Angela	29/7/09	9:00am
			Angela	29/7/09	3:55pm COC

Comments	Sample Matrix	Container Type and Preservative	Sample No.		Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals 8	OCPs/OPPs	Sample Condition on Receipt
	Soil	250ml Jar	OS19-0.0-0.2	1	28/7/09				X	X	
			OS20-0.0-0.2	2					X		
			OS20-0.5-0.6	3							
			OS18-0.0-0.2	4					X		
			OS17-0.0-0.2	5					X		
			OS17-0.5-0.6	6							
			OS15-0.0-0.2	7					X	X	
			OS15-0.5-0.6	8							
			OS14-0.0-0.2	9					X		
			RE35-0.0-0.2	10					X	X	
			RE35-0.5-0.6	11							
			OS13-0.0-0.2	12					X		
			RE31-0.0-0.2	13					X		
			RE32-0.0-0.2	14					X		
			RE24-0.0-0.2	15					X	X	
			RE24-0.5-0.6	16							
			RE30-0.0-0.2	17					X	X	

SGS
Received 29/7/09
By D
Time 9 am
Samples Intact Yes
Ice/Cooler Pack Yes
Temperature on Receipt 6 °C
Storage Location 5651-656
SGS REF No 70934

Special Laboratory Instructions: Analysis to be advised

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

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Chain of Custody

Laboratory Quotation / Order No:

Job No: [illegible] Sheet 2 of 6

No: 26355

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: [illegible] Date Dispatched: 28/7/09
Attention: Sample Receipt	Project Manager: (report results to) Chris [illegible]	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	28/7/09	5:00pm	Angela	29/7/09	9:00am
			Angela	29/7/09	3:55pm - COC

Comments	Sample Matrix	Container Type and Preservative	Sample No.		Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals 8	OCP/OPP											Sample Condition on Receipt
	Soil	250ml Jar	RE30-0.0-0.2		24/7/09				/												
	↓	↓	RE33-0.0-0.2	18	↓				X												
			OS16-0.0-0.2	19					X	X											
			OS16-0.5-0.6	20																	
			OS03-0.0-0.2	21					X												
			OS04-0.0-0.2	22					X												
			OS08-0.0-0.2	23					X	X											
			RE26-0.0-0.2	24					X	X											
			RE25-0.5-0.6	25																	
			RE29-0.0-0.2	26					X												
			RE29-0.5-0.6	27																	
			RE41-0.0-0.2	28					X	X											
			QS7	29					X	X											
	Water	1 Amber, [illegible], 2 Vials	WB2	30					X	X											
	↓	1 Vial	TB2	31																	
	Soil	250ml Jar	RE17-0.0-0.2	32	24/7/09				X	X											
	↓	↓	RE12 0.5-0.6	33	↓																

Special Laboratory Instructions: Analyses to be advised

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

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Chain of Custody

Laboratory Quotation / Order No:

No: 26356

Job No: E00022AA Sheet 3 of 6

Dispatch to: (Address & Phone No.) SCS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 28/7/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Custer	Courier Service: TNT Consignment Note No:

Relinquished by: Charlie Lucas	Date:	Time:	Received by:	Date:	Time:
	28/7/09	5:00pm	Angela	29/7/09	9:00am
			Angela	29/7/09	3:55pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: 9	CEC/pH	Sample Condition on Receipt
	Soil	250ml Jar	DS01-0.0-0.2 34	27/7/09				X	X	
	↓	↓	RE07-0.0-0.2 35	↓				X		
			RE07-0.5-0.6 36							
			RE08-0.0-0.2 37					X		
			RE05-0.5-0.6 38							
			RE11-0.0-0.2 39					X		
			RE15-0.0-0.2 40					X	X	
			RE16-0.5-0.6 41							
			RE17-0.0-0.2 42					X	X	
			RE23-0.0-0.2 43					X		
			CS12-0.0-0.2 44					X		
			CS11-0.0-0.2 45					X		
			RE27-0.0-0.2 46					X	X	
			RE21-0.0-0.2 47					X		
			RE18-0.0-0.2 48					X		
			RE15-0.5-0.6 49							
			DS03-0.0-0.2 50					X		

Special Laboratory Instructions: Analyses to be advised

Detection Limits: Lowest Level Detection   Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

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Chain of Custody

No: 26357

Laboratory Quotation / Order No:

Job No: ECO0235AA Sheet 4 of 6

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Charlie Lucas
		Date Dispatched: 28/7/09
Attention: Sample Receipts	Project Manager: (report results to) Claire Custer	Courier Service: TNT
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	28/7/09	5:00pm	Angela	29/7/09	9:00am
			Angela	29/7/09	3:55pm — COC

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals 7	OCP/OPP	Sample Condition on Receipt
	Soil	250ml Jar	CS09-0.5-0.6 51	27/7/09						
	↓	↓	RE39-0.0-0.2 52	↓				X	X	
			RE40-0.0-0.2 53					X		
			RE38-0.0-0.2 54					X		
			RE37-0.0-0.2 55					X		
			RE37-0.5-0.6 56							
			RE36-0.0-0.2 57					X		
			RE34-0.0-0.2 58					X		
			RE34-0.5-0.6 59							
			QC3 60					X		
	Water	1 Amber + 1 Plastic + 2 Vial	WB3 61					X		
	↓	↓	TB3 62							
	Soil	250ml Jar	CS02-0.0-0.2 63	28/7/09				X		
	↓	↓	RE01-0.0-0.2 64	↓				X		
			RE01-0.5-0.6 65							
			RE02-0.0-0.2 66					X		
			RE02-0.5-0.6 67							

Special Laboratory Instructions: Analysis to be advised

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

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Chain of Custody

Laboratory Quotation / Order No:

No: 26358

Job No: ECO0233AA   Sheet 5 of 6

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Coulbeston Date Dispatched: 28/7/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Cowlan	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	28/7/09	5:00pm	Angela	29/7/09	9:00am
			Angela	29/7/09	3:55pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals: 8	OCPs/OPPs	pH	Sample Condition on Receipt
	Soil	250ml Jar	REC8-0.0-0.2 68	28/7/09				X			
			REC9-0.0-0.2 69					X			
			K3-0.0-0.2 70		X					X	
			K3-0.5-0.6 71		X					X	
			K3-0.9-1.0 72								
			K2-0.0-0.2 73		X					X	
			K2-0.5-0.6 74		X					X	
			K2-0.9-1.0 75								
			K1-0.0-0.2 76		X					X	
			K1-0.5-0.6 77		X					X	
			K1-0.9-1.0 78								
			MS3-1-0.0-0.2 79					X			
			MS3-2-0.0-0.2 80					X			
			MS3-3-0.0-0.2 81					X			
			MS3-3-0.5-0.6 82					X			
			MS3-4-0.0-0.2 83					X			
			MS3-5-0.0-0.2 84					X			

Special Laboratory Instructions: Analyses to be advised

Detection Limits: Lowest Level Detection   Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release   YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey.   BLUE: To be returned with results.

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Chain of Custody

Laboratory Quotation / Order No:

No: 26359

Job No: E00278AA? Sheet 6 of 6

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Cambesso?
		Date Dispatched: 28/7/09
Attention: Sample Receipt	Project Manager: (report results to) Chris Cumber?	Courier Service: TNT
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	28/7/09	5:00pm	Angela	29/7/09	9:00am
			Angela	29/7/09	3:55pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.		Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: ?8	OCP/OPP	pH	Sample Condition on Receipt
	Soil	250ml Jar	NS3-6-0.0-0.2	85	28/7/09				X			
			NS3-7-0.0-0.2	86					X			
			NS3-8-0.0-0.2	87					X			
			NS3-9-0.0-0.2	88					X			
			NS3-10-0.0-0.2	89					X			
			NS3-11-0.0-0.2	90					X			
			NS3-12-0.0-0.2	91					X			
			NS3-13-0.0-0.2	92					X			
			NS3-13-0.5-0.6	93					X			
			NS3-14-0.0-0.2	94					X			
			NS3-15-0.0-0.2	95					X			
			NS3-15-0.5-0.6	96					X			
			QC4	97		X					X	
			QC5	98					X			
	Water	1 Amber, 1 plastic?	WB4	99		X			X			
		1 Vial	TB4	100								
		1 Vial	TS2	101								

Special Laboratory Instructions: Analysis to be advised

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release YELLOW: If dispatched to interstate Lab: Lab to sign on receipt and fax back to Coffey BLUE: To be returned with results.

64220/9-06

AU.SampleReceipt.Sydney (Sydney)

From:	Chris Gunton [Chris_Gunton@coffey.com]
Sent:	Wednesday, 29 July 2009 3:55 PM
To:	AU.SampleReceipt.Sydney (Sydney)
Subject:	RE: EC00233AA, SGS SE70984
Attachments:	20090729165209441.pdf

Hi Emily,

Please find attached the COC's for EC00233AA

Regards

CHRIS GUNTON
Project Geologist

Coffey Environments Pty Ltd
2/54 Northbourne Avenue Canberra ACT 2609 Australia
T (+61) (2) 6248 7154 F (+61) (2) 6248 7157 M 0420 960 831
coffey.com

YEARS
AN EXTRAORDINARY JOURNEY

From: AU.SampleReceipt.Sydney (Sydney) [mailto:AU.SampleReceipt.Sydney@sgs.com]
Sent: Wednesday, 29 July 2009 1:28 PM
To: Chris Gunton; Charles Lucas
Subject: EC00233AA, SGS SE70984

Hello,

OS09_0.5-0.6 received broken.
Please forward analysis as soon as possible. Thank You.

Kind Regards
Emily Yin
Environmental Services
Sample Administration Officer

SGS Australia Pty Ltd
Unit 16, 33 Maddox St
Alexandria, NSW, 2015
Phone: +61 (0)2 8594 0400
Fax: +61 (0)2 8594 0499
E-mail: au.samplereceipt.sydney@sgs.com
Web: www.au.sgs.com

SAMPLE RECEIPT ADVICE (SRA)

30 July 2009

Client Details			**Laboratory Details**		
Requested By	:	**Chris Gunton**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Chris Gunton	Manager	:	Edward Ibrahim
Address	:	2/54 Northbourne Avenue PO Box 1986 CANBERRA ACT 2602	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	chris_gunton@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE70984**
Order Number	:	26354-26359	No. of Samples	:	101
Samples	:	94 Soils, 7 Waters	Due Date	:	5/08/2009

Date Instructions Received : 29/07/2009
Sample Receipt Date : 29/07/09

Samples received in good order	:	NO	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice Pack
Sample containers provided by	:	Other Lab	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

OS09_0.5-0.6 sample jar received broken at SGS.

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liablility and to the clauses of indemnification.

The signed chain of custody will be returned to you with the original report.

SGS

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE70984
Project : EC00233AA

Summary of Samples and Requested Analysis

The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.
Please indicate ASAP if your request differs from these details.
Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.
Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep & Inorganics - All	PAHs in Soil	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	PAHs in Water	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Hold sample-NO test required	Moisture
1	OS19_0.0-0.2	x		X	X		X	X							X
2	OS20_0.0-0.2	x					X	X							X
3	OS20_0.5-0.6													X	
4	OS18_0.0-0.2	x					X	X							X
5	OS17_0.0-0.2	x					X	X							X
6	OS17_0.5-0.6													X	
7	OS15_0.0-0.2	x		X	X		X	X							X
8	OS15_0.5-0.6													X	
9	OS14_0.0-0.2	x					X	X							X
10	RE35_0.0-0.2	x		X	X		X	X							X
11	RE35_0.5-0.6													X	
12	OS13_0.0-0.2	x					X	X							X
13	RE31_0.0-0.2	x					X	X							X
14	RE32_0.0-0.2	x					X	X							X
15	RE24_0.0-0.2	x		X	X		X	X							X
16	RE24_0.5-0.6													X	
17	RE30_0.0-0.2	x		X	X		X	X							X
18	RE33_0.0-0.2	x					X	X							X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE70984
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	PAHs in Soil	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	PAHs in Water	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Hold sample-NO test required	Moisture
19	OS16_0.0-0.2	x		X	X		X	X							X
20	OS16_0.5-0.6													X	
21	OS03_0.0-0.2	x					X	X							X
22	OS04_0.0-0.2	x					X	X							X
23	OS06_0.0-0.2	x		X	X		X	X							X
24	RE25_0.0-0.2	x		X	X		X	X							X
25	RE25_0.5-0.6													X	
26	RE29_0.0-0.2	x					X	X							X
27	RE29_0.5-0.6													X	
28	RE41_0.0-0.2	x		X	X		X	X							X
29	QC2	x		X	X		X	X							X
30	WB2	x								X	X	X	X		
31	TB2													X	
32	RE12_0.0-0.2	x		X	X		X	X							X
33	RE12_0.5-0.6													X	
34	OS01_0.0-0.2	x		X	X		X	X							X
35	RE07_0.0-0.2	x					X	X							X
36	RE07_0.5-0.6													X	
37	RE08_0.0-0.2	x					X	X							X
38	RE08_0.5-0.6													X	
39	RE11_0.0-0.2	x					X	X							X
40	RE16_0.0-0.2	x		X	X		X	X							X
41	RE16_0.5-0.6													X	
42	RE17_0.0-0.2	x		X	X		X	X							X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE70984
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	PAHs in Soil	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	PAHs in Water	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Hold sample-NO test required	Moisture
43	RE23_0.0-0.2	x					X	X							X
44	OS12_0.0-0.2	x					X	X							X
45	OS11_0.0-0.2	x					X	X							X
46	RE27_0.0-0.2	x		X	X		X	X							X
47	RE21_0.0-0.2	x					X	X							X
48	RE18_0.0-0.2	x					X	X							X
49	RE18_0.5-0.6													X	
50	OS09_0.0-0.2	x					X	X							X
52	RE39_0.0-0.2	x		X	X		X	X							X
53	RE40_0.0-0.2	x					X	X							X
54	RE38_0.0-0.2	x					X	X							X
55	RE37_0.0-0.2	x					X	X							X
56	RE37_0.5-0.6													X	
57	RE36_0.0-0.2	x					X	X							X
58	RE34_0.0-0.2	x					X	X							X
59	RE34_0.5-0.6													X	
60	QC3	x					X	X							X
61	WB3	x										X	X		
62	TB3													X	
63	OS02_0.0-0.2	x					X	X							X
64	RE01_0.0-0.2	x					X	X							X
65	RE01_0.5-0.6													X	
66	RE03_0.0-0.2	x					X	X							X
67	RE03_0.5-0.6													X	

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE70984
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	PAHs in Soil	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	PAHs in Water	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Hold sample-NO test required	Moisture
68	RE04_0.0-0.2	x					X	X							X
69	RE09_0.0-0.2	x					X	X							X
70	K3_0.0-0.2		X			X									X
71	K3_0.5-0.6		X			X									X
72	K3_0.9-1.0													X	
73	K2_0.0-0.2		X			X									X
74	K2_0.5-0.6		X			X									X
75	K2_0.9-1.0													X	
76	K1_0.0-0.2		X			X									X
77	K1_0.5-0.6		X			X									X
78	K1_0.9-1.0													X	
79	MS3-1_0.0-0.2	x					X	X							X
80	MS3-2_0.0-0.2	x					X	X							X
81	MS3-3_0.0-0.2	x					X	X							X
82	MS3-3_0.5-0.6	x					X	X							X
83	MS3-4_0.0-0.2	x					X	X							X
84	MS3-5_0.0-0.2	x					X	X							X
85	MS3-6_0.0-0.2	x					X	X							X
86	MS3-7_0.0-0.2	x					X	X							X
87	MS3-8_0.0-0.2	x					X	X							X
88	MS3-9_0.0-0.2	x					X	X							X
89	MS3-10_0.0-0.2	x					X	X							X
90	MS3-11_0.0-0.2	x					X	X							X
91	MS3-12_0.0-0.2	x					X	X							X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE70984
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	PAHs in Soil	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	PAHs in Water	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Hold sample-NO test required	Moisture
92	MS3-13_0.0-0.2	x					X	X							X
93	MS3-13_0.5-0.6	x					X	X							X
94	MS3-14_0.0-0.2	x					X	X							X
95	MS3-15_0.0-0.2	x					X	X							X
96	MS3-15_0.5-0.6	x					X	X							X
97	QC4		X			X									X
98	QC5	x					X	X							X
99	WB4	x							X			X	X		
100	TB4													X	
101	TS2													X	

Sample No.	Description
1	OS19_0.0-0.2
2	OS20_0.0-0.2
3	OS20_0.5-0.6
4	OS18_0.0-0.2
5	OS17_0.0-0.2
6	OS17_0.5-0.6
7	OS15_0.0-0.2
8	OS15_0.5-0.6
9	OS14_0.0-0.2

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE70984
Project	:	EC00233AA			

Sample No.	Description
10	RE35_0.0-0.2
11	RE35_0.5-0.6
12	OS13_0.0-0.2
13	RE31_0.0-0.2
14	RE32_0.0-0.2
15	RE24_0.0-0.2
16	RE24_0.5-0.6
17	RE30_0.0-0.2
18	RE33_0.0-0.2
19	OS16_0.0-0.2
20	OS16_0.5-0.6
21	OS03_0.0-0.2
22	OS04_0.0-0.2
23	OS06_0.0-0.2
24	RE25_0.0-0.2
25	RE25_0.5-0.6
26	RE29_0.0-0.2
27	RE29_0.5-0.6
28	RE41_0.0-0.2
29	QC2
30	WB2
31	TB2
32	RE12_0.0-0.2
33	RE12_0.5-0.6
34	OS01_0.0-0.2
35	RE07_0.0-0.2
36	RE07_0.5-0.6
37	RE08_0.0-0.2
38	RE08_0.5-0.6

SGS

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE70984
Project : EC00233AA

Sample No.	Description
39	RE11_0.0-0.2
40	RE16_0.0-0.2
41	RE16_0.5-0.6
42	RE17_0.0-0.2
43	RE23_0.0-0.2
44	OS12_0.0-0.2
45	OS11_0.0-0.2
46	RE27_0.0-0.2
47	RE21_0.0-0.2
48	RE18_0.0-0.2
49	RE18_0.5-0.6
50	OS09_0.0-0.2
52	RE39_0.0-0.2
53	RE40_0.0-0.2
54	RE38_0.0-0.2
55	RE37_0.0-0.2
56	RE37_0.5-0.6
57	RE36_0.0-0.2
58	RE34_0.0-0.2
59	RE34_0.5-0.6
60	QC3
61	WB3
62	TB3
63	OS02_0.0-0.2
64	RE01_0.0-0.2
65	RE01_0.5-0.6
66	RE03_0.0-0.2
67	RE03_0.5-0.6
68	RE04_0.0-0.2

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE70984
Project	:	EC00233AA			

Sample No.	Description
69	RE09_0.0-0.2
70	K3_0.0-0.2
71	K3_0.5-0.6
72	K3_0.9-1.0
73	K2_0.0-0.2
74	K2_0.5-0.6
75	K2_0.9-1.0
76	K1_0.0-0.2
77	K1_0.5-0.6
78	K1_0.9-1.0
79	MS3-1_0.0-0.2
80	MS3-2_0.0-0.2
81	MS3-3_0.0-0.2
82	MS3-3_0.5-0.6
83	MS3-4_0.0-0.2
84	MS3-5_0.0-0.2
85	MS3-6_0.0-0.2
86	MS3-7_0.0-0.2
87	MS3-8_0.0-0.2
88	MS3-9_0.0-0.2
89	MS3-10_0.0-0.2
90	MS3-11_0.0-0.2
91	MS3-12_0.0-0.2
92	MS3-13_0.0-0.2
93	MS3-13_0.5-0.6
94	MS3-14_0.0-0.2
95	MS3-15_0.0-0.2
96	MS3-15_0.5-0.6
97	QC4

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE70984
Project	:	EC00233AA			

Sample No.	Description
98	QC5
99	WB4
100	TB4
101	TS2

coffey

Chain of Custody

Laboratory Quotation / Order No:

No: 26363

Job No: [illegible]0233AA Sheet 1 of 3

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 30/7/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Cantan	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	30/7/09	3:30pm	David	31/7/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs – BTEX	Metals: 8	pH	Sample Condition on Receipt
	Soil	250ml Jar	1 MS1-1-0.0-0.2	30/7/09				X	X	
			2 MS1-1-0.5-0.6					X		
			3 MS1-2-0.0-0.2					X		
			4 MS1-2-0.5-0.6					X		
			5 MS1-3-0.0-0.2					X		
			6 MS1-3-0.5-0.6					X		
			7 MS1-4-0.0-0.2					X	X	
			8 MS1-4-0.5-0.6					X		
			9 MS1-5-0.0-0.2					X		
			10 MS1-5-0.5-0.6					X		
			11 MS1-6-0.0-0.2					X		
			12 MS1-6-0.5-0.6					X		
			13 MS1-7-0.0-0.2					X		
			14 MS1-7-0.5-0.6					X	X	
			15 MS1-7-0.9-1.0					X		
			16 MS1-7-1.4-1.5					X	X	
			17 MS1-8-0.0-0.2					X		

SGS
Received 31/7/09
Time 9
Cooler Pack
Temperature on Receipt 7
Storage Location 5668-670, W212
SGS REF No 71036

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release YELLOW: If dispatched to interstate Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

coffey

Chain of Custody

No: 26364

Laboratory Quotation / Order No:

Job No: E(00233AA Sheet 2 of 3

Dispatch to: (Address & Phone No.) SGS

Sampled by: Charlie Lucas

Consigning Officer: Canberra

Date Dispatched: 30/7/09

Attention: Sample Receipts

Project Manager: (report results to) Chris Gunton

Courier Service: TNT

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	30/7/09	3:30pm	David	31/7/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs - BTEX	Metals: 8	pH	Sample Condition on Receipt
	Soil	250ml Jar	18 MS1-8-0.5-0.6	30/7/09				X		
			19 MS1-9-0.0-0.2					X	X	
			20 MS1-9-0.5-0.6					X		
			21 MS1-10-0.0-0.2					X		
			22 MS1-10-0.5-0.6					X		
			23 MS1-11-0.0-0.2					X		
			24 MS1-11-0.5-0.6					X	X	
			25 MS1-11-0.9-1.0					X		
			26 MS1-12-0.0-0.2					X		
			27 MS1-12-0.5-0.6					X		
			28 MS1-13-0.0-0.2					X		
			29 MS1-13-0.5-0.6					X		
			30 MS1-14-0.0-0.2					X	X	
			31 MS1-14-0.5-0.6					X		
			32 MS1-15-0.0-0.2					X		
			33 MS1-15-0.5-0.6					X		
			34 MS1-16-0.0-0.2					X	X	

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab; Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results

coffey

Chain of Custody

No: 26365

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 3 of 3

Dispatch to: (Address & Phone No.) SCS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 30/7/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Gunton	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	30/7/09	3:30pm	David	31/7/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	~~TPH~~ - BTEX	Metals 8	pH	Sample Condition on Receipt
	Soil	250ml Jar	35 MS1-16-0.5-0.6	30/7/09				X		
			36 QC6					X	X	
			37 QC7					X	X	
	Water	1 Vial	38 TBS				X			
			39 TS3				X			

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

SAMPLE RECEIPT ADVICE (SRA)

31 July 2009

Client Details			Laboratory Details		
Requested By	:	**Chris Gunton**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Chris Gunton	Manager	:	Edward Ibrahim
Address	:	2/54 Northbourne Avenue PO Box 1986 CANBERRA ACT 2602	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	chris_gunton@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE71036**
Order Number	:	26363-5	No. of Samples	:	39
Samples	:	37 Soils, 2 Waters	Due Date	:	7/08/2009

Date Instructions Received : 31/07/2009
Sample Receipt Date : 31/7/09

Samples received in good order	:	YES	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice Pack
Sample containers provided by	:	Other Lab	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liablility and to the clauses of indemnification.

The signed chain of custody will be returned to you with the original report.

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71036
Project	:	EC00233AA			

Summary of Samples and Requested Analysis

The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.
Please indicate ASAP if your request differs from these details.
Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.
Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep & Inorganics - All	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	Moisture
1	MS1-1_0.0-0.2	X	X	X	X		X
2	MS1-1_0.5-0.6	X		X	X		X
3	MS1-2_0.0-0.2	X		X	X		X
4	MS1-2_0.5-0.6	X		X	X		X
5	MS1-3_0.0-0.2	X		X	X		X
6	MS1-3_0.5-0.6	X		X	X		X
7	MS1-4_0.0-0.2	X	X	X	X		X
8	MS1-4_0.5-0.6	X		X	X		X
9	MS1-5_0.0-0.2	X		X	X		X
10	MS1-5_0.5-0.6	X		X	X		X
11	MS1-6_0.0-0.2	X		X	X		X
12	MS1-6_0.5-0.6	X		X	X		X
13	MS1-7_0.0-0.2	X		X	X		X
14	MS1-7_0.5-0.6	X	X	X	X		X
15	MS1-7_0.9-1.0	X		X	X		X
16	MS1-7_1.4-1.5	X	X	X	X		X
17	MS1-8_0.0-0.2	X		X	X		X
18	MS1-8_0.5-0.6	X		X	X		X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE71036
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	Moisture
19	MS1-9_0.0-0.2	X	X	X	X		X
20	MS1-9_0.5-0.6	X		X	X		X
21	MS1-10_0.0-0.2	X		X	X		X
22	MS1-10_0.5-0.6	X		X	X		X
23	MS1-11_0.0-0.2	X		X	X		X
24	MS1-11_0.5-0.6	X	X	X	X		X
25	MS1-11_0.9-1.0	X		X	X		X
26	MS1-12_0.0-0.2	X		X	X		X
27	MS1-12_0.5-0.6	X		X	X		X
28	MS1-13_0.0-0.2	X		X	X		X
29	MS1-13_0.5-0.6	X		X	X		X
30	MS1-14_0.0-0.2	X	X	X	X		X
31	MS1-14_0.5-0.6	X		X	X		X
32	MS1-15_0.0-0.2	X		X	X		X
33	MS1-15_0.5-0.6	X		X	X		X
34	MS1-16_0.0-0.2	X	X	X	X		X
35	MS1-16_0.5-0.6	X		X	X		X
36	QC6	X	X	X	X		X
37	QC7	X	X	X	X		X
38	TB5					X	
39	TS3					X	

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71036
Project	:	EC00233AA			

Sample No.	Description
1	MS1-1_0.0-0.2
2	MS1-1_0.5-0.6
3	MS1-2_0.0-0.2
4	MS1-2_0.5-0.6
5	MS1-3_0.0-0.2
6	MS1-3_0.5-0.6
7	MS1-4_0.0-0.2
8	MS1-4_0.5-0.6
9	MS1-5_0.0-0.2
10	MS1-5_0.5-0.6
11	MS1-6_0.0-0.2
12	MS1-6_0.5-0.6
13	MS1-7_0.0-0.2
14	MS1-7_0.5-0.6
15	MS1-7_0.9-1.0
16	MS1-7_1.4-1.5
17	MS1-8_0.0-0.2
18	MS1-8_0.5-0.6
19	MS1-9_0.0-0.2
20	MS1-9_0.5-0.6
21	MS1-10_0.0-0.2
22	MS1-10_0.5-0.6
23	MS1-11_0.0-0.2
24	MS1-11_0.5-0.6
25	MS1-11_0.9-1.0
26	MS1-12_0.0-0.2
27	MS1-12_0.5-0.6
28	MS1-13_0.0-0.2
29	MS1-13_0.5-0.6

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71036
Project	:	EC00233AA			

Sample No.	Description
30	MS1-14_0.0-0.2
31	MS1-14_0.5-0.6
32	MS1-15_0.0-0.2
33	MS1-15_0.5-0.6
34	MS1-16_0.0-0.2
35	MS1-16_0.5-0.6
36	QC6
37	QC7
38	TB5
39	TS3

coffey

Chain of Custody

No: 26367

Laboratory Quotation / Order No:

Job No: E[illegible] Sheet 1 of 4

Dispatch to: (Address & Phone No.) SGS	Sampled by: [illegible]	Consigning Officer: [illegible] Date Dispatched: 5/8/09
Attention: Sample Receipt	Project Manager (report results to): [illegible]	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[illegible]	5/8/09	4:35	David	6/8/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No	Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals	OCP	Cyanide	Sulfide	Sample Condition on Receipt
	Soil	250 [illegible]	1 NP1-0.0-0.2	5/8/09				X	X	X	X	
			2 NP1-0.5-0.6					X				
			3 NP1-0.9-1.0									
			4 NP2-0.0-0.2					X	X	X	X	
			5 NP2-0.5-0.6					X				
			6 NP2-0.9-1.0									
			7 NP3-0.0-0.2					X				
			8 NP3-0.5-0.6					X				
			9 NP3-0.9-1.0									
			10 NP4-0.0-0.2					X	X	X	X	
			11 NP4-0.5-0.6					X				
			12 NP4-0.9-1.0									
			13 NP5-0.0-0.2					X				
			14 NP5-0.5-0.6					X				
			15 NP5-0.9-1.0									
			16 NP6-0.0-0.2					X				
			17 NP6-0.5-0.6					X				

SGS
Received 6/8/09
By D
Time 9
Samples intact
Ice/Cooler Pack
Temperature on Receipt
Storage Location S702[illegible]-705, W027
SGS REF No. 71167

Special Laboratory Instructions: Analysis to be advised

Detection Limits: [illegible]

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

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Chain of Custody

No: 26368

Laboratory Quotation / Order No:

Job No: [illegible] Sheet [illegible] of 4

Dispatch to: (Address & Phone No.) [illegible]	Sampled by: [illegible]	Consigning Officer: [illegible] Date Dispatched: [illegible]
Attention: [illegible]	Project Manager: (report results to) [illegible]	Courier Service: [illegible] Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[illegible]	[illegible]	[illegible]	David	6/3/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs / BTEX	Metals	OCP	Cyanide	Sulfide	Sample Condition on Receipt
			18 [illegible]	[illegible]								
			19 [illegible]					X				
			20 [illegible]					X				
			21 [illegible]									
			22 [illegible]					X				
			23 [illegible]					X				
			24 [illegible]					X	X	X	X	
			25 [illegible]					X				
			26 [illegible]									
			27 [illegible]					X	X	X	X	
			28 [illegible]					X				
			29 [illegible]					X	X	X	X	
			30 [illegible]					X				
			31 [illegible]									
			32 [illegible]					X				
			33 [illegible]					X				
			34 [illegible]									

Special Laboratory Instructions: [illegible]

Detection Limits: [illegible]

Turnaround Required: [illegible]

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey BLUE: To be returned with results.

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Chain of Custody

Laboratory Quotation / Order No:

Job No: [illegible] Sheet 3 of 4

No: 26369

Dispatch to: (Address & Phone No.) SGS	Sampled by: [illegible]	Consigning Officer: [illegible]
		Date Dispatched: 5/3/09
Attention: Sample Receipt	Project Manager: (report results to) [illegible]	Courier Service: [illegible]
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[illegible]	[illegible]	[illegible]	David	6/3/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: 8	OCP	Cyanide	Sulfide	Sample Condition on Receipt
	Soil	250ml Jar	35 MP13-0.0-0.2	4/3/09				X	X	X	X	
			36 MP13-0.5-0.6					X				
			37 MP13-0.9-1.0									
			38 QC8					X	X	X	X	
	Water	[illegible]	39 WB5									
			40 TB6									
	Soil	250ml Jar	41 MP14-0.0-0.2	5/3/09				X	X	X	X	
			42 MP14-0.5-0.6					X				
			43 MP14-0.9-1.0									
			44 MP15-0.0-0.2					X				
			45 MP15-0.5-0.6					X				
			46 MP16-0.0-0.2					X				
			47 MP16-0.5-0.6					X				
			48 MP16-0.9-1.0									
			49 MPSUMP-1					X	X	X	X	
			50 MPSUMP-2					X	X	X	X	
			51 SP1					X	X			

Special Laboratory Instructions: Analysis to be advised

Detection Limits: Lowest Level Detectable

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

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Chain of Custody

No: 26370

Laboratory Quotation / Order No:

Job No.   Sheet   of 4

Dispatch to: (Address & Phone No.)	Sampled by:	Consigning Officer:
		Date Dispatched:
Attention:	Project Manager: (report results to)	Courier Service:
		Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			David	6/8/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals	Cyanide	Sulfide	OCP								Sample Condition on Receipt
			52					X			X								
			53					X			X								
			54					X			X								
			55					X	X	X	X								
			56					X			X								
			57																
			58																

Special Laboratory Instructions:

Detection Limits: Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

SAMPLE RECEIPT ADVICE (SRA)

6 August 2009

Client Details			Laboratory Details		
Requested By	:	**Chris Gunton**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Chris Gunton	Manager	:	Edward Ibrahim
Address	:	2/54 Northbourne Avenue PO Box 1986 CANBERRA ACT 2602	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	chris_gunton@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE71167**
Order Number	:	26367-70	No. of Samples	:	58
Samples	:	54 Soils, 4 Waters	Due Date	:	17/08/2009

Date Instructions Received	:	6/08/2009
Sample Receipt Date	:	6/8/09

Samples received in good order	:	YES	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice Pack
Sample containers provided by	:	Other Lab	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

Sulphide subcontracted to SGS Cairns

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liablility and to the clauses of indemnification.

The signed chain of custody will be returned to you with the original report.

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE71167
Project : EC00233AA

Summary of Samples and Requested Analysis

The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.
Please indicate ASAP if your request differs from these details.
Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.
Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep & Inorganics - All	OC Pesticides in Soil	Cyanide	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	External	Hold sample-NO test required	Moisture
1	MP1_0.0-0.2	X	X	X	X	X	X		X
2	MP1_0.5-0.6	X			X	X			X
3	MP1_0.9-1.0							X	
4	MP2_0.0-0.2	X	X	X	X	X	X		X
5	MP2_0.5-0.6	X			X	X			X
6	MP2_0.9-1.0							X	
7	MP3_0.0-0.2	X			X	X			X
8	MP3_0.5-0.6	X			X	X			X
9	MP3_0.9-1.0							X	
10	MP4_0.0-0.2	X	X	X	X	X	X		X
11	MP4_0.5-0.6	X			X	X			X
12	MP4_0.9-1.0							X	
13	MP5_0.0-0.2	X			X	X			X
14	MP5_0.5-0.6	X			X	X			X
15	MP5_0.9-1.0							X	
16	MP6_0.0-0.2	X			X	X			X
17	MP6_0.5-0.6	X			X	X			X
18	MP6_0.9-1.0							X	

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No :	SE71167
Project	:	EC00233AA		

Sample No.	Description	Metals Prep & Inorganics - All	OC Pesticides in Soil	Cyanide	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	External	Hold sample-NO test required	Moisture
19	MP7_0.0-0.2	X			X	X			X
20	MP7_0.5-0.6	X			X	X			X
21	MP7_0.9-1.0							X	
22	MP8_0.0-0.2	X			X	X			X
23	MP8_0.5-0.6	X			X	X			X
24	MP9_0.0-0.2	X	X	X	X	X	X		X
25	MP9_0.5-0.6	X			X	X			X
26	MP9_0.9-1.0							X	
27	MP10_0.0-0.2	X	X	X	X	X	X		X
28	MP10_0.5-0.6	X			X	X			X
29	MP11_0.0-0.2	X	X	X	X	X	X		X
30	MP11_0.5-0.6	X			X	X			X
31	MP11_0.9-1.0							X	
32	MP12_0.0-0.2	X			X	X			X
33	MP12_0.5-0.6	X			X	X			X
34	MP12_0.9-1.0							X	
35	MP13_0.0-0.2	X	X	X	X	X	X		X
36	MP13_0.5-0.6	X			X	X			X
37	MP13_0.9-1.0							X	
38	QC8	X	X	X	X	X	X		X
39	WB5							X	
40	TB6							X	
41	MP14_0.0-0.2	X	X	X	X	X	X		X
42	MP14_0.5-0.6	X			X	X			X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE71167
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	OC Pesticides in Soil	Cyanide	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	External	Hold sample-NO test required	Moisture
43	MP14_0.9-1.0							X	
44	MP15_0.0-0.2	X			X	X			X
45	MP15_0.5-0.6	X			X	X			X
46	MP16_0.0-0.2	X			X	X			X
47	MP16_0.5-0.6	X			X	X			X
48	MP16_0.9-1.0							X	
49	MPSUMP-1	X	X	X	X	X	X		X
50	MPSUMP-2	X	X	X	X	X	X		X
51	SP1	X	X		X	X			X
52	SP2	X	X		X	X			X
53	SP3	X	X		X	X			X
54	SP4	X	X		X	X			X
55	QC9	X	X	X	X	X	X		X
56	QC10	X			X	X			X
57	TB7							X	
58	TS4							X	

Sample No.	Description
1	MP1_0.0-0.2
2	MP1_0.5-0.6
3	MP1_0.9-1.0

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No :	SE71167
Project	:	EC00233AA		

Sample No.	Description
4	MP2_0.0-0.2
5	MP2_0.5-0.6
6	MP2_0.9-1.0
7	MP3_0.0-0.2
8	MP3_0.5-0.6
9	MP3_0.9-1.0
10	MP4_0.0-0.2
11	MP4_0.5-0.6
12	MP4_0.9-1.0
13	MP5_0.0-0.2
14	MP5_0.5-0.6
15	MP5_0.9-1.0
16	MP6_0.0-0.2
17	MP6_0.5-0.6
18	MP6_0.9-1.0
19	MP7_0.0-0.2
20	MP7_0.5-0.6
21	MP7_0.9-1.0
22	MP8_0.0-0.2
23	MP8_0.5-0.6
24	MP9_0.0-0.2
25	MP9_0.5-0.6
26	MP9_0.9-1.0
27	MP10_0.0-0.2
28	MP10_0.5-0.6
29	MP11_0.0-0.2
30	MP11_0.5-0.6
31	MP11_0.9-1.0
32	MP12_0.0-0.2

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE71167
Project : EC00233AA

Sample No.	Description
33	MP12_0.5-0.6
34	MP12_0.9-1.0
35	MP13_0.0-0.2
36	MP13_0.5-0.6
37	MP13_0.9-1.0
38	QC8
39	WB5
40	TB6
41	MP14_0.0-0.2
42	MP14_0.5-0.6
43	MP14_0.9-1.0
44	MP15_0.0-0.2
45	MP15_0.5-0.6
46	MP16_0.0-0.2
47	MP16_0.5-0.6
48	MP16_0.9-1.0
49	MPSUMP-1
50	MPSUMP-2
51	SP1
52	SP2
53	SP3
54	SP4
55	QC9
56	QC10
57	TB7
58	TS4

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Chain of Custody

Laboratory Quotation / Order No:

No: 26374

Job No: EC00233AA Sheet 1 of 3

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 6/8/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Gunton	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	6/8/09	4:30pm	David	7/8/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs - BTEX	Metals 8	pH	Sample Condition on Receipt
	Soil	250ml Jar	1 MS4-1-0.0-0.2	6/8/09				X	X	
	↓	↓	2 MS4-1-0.5-0.6	↓				X		
			3 MS4-2-0.0-0.2					X		
			4 MS4-2-0.5-0.6					X		
			5 MS4-3-0.0-0.2					X		
			6 MS4-3-0.5-0.6					X		
			7 MS4-4-0.0-0.2					X	X	
			8 MS4-4-0.5-0.6					X		
			9 MS4-5-0.0-0.2					X		
			10 MS4-5-0.5-0.6					X		
			11 MS4-6-0.0-0.2					X		
			12 MS4-6-0.5-0.6					X		
			13 MS4-7-0.0-0.2					X	X	
			14 MS4-8-0.0-0.2					X		
			15 MS4-9-0.0-0.2					X		
			16 MS4-10-0.0-0.2					X		
			17 MS4-11-0.0-0.2					X	X	

SGS
7/8/09
Cooler Pack
Temperature on Receipt 6 °C
Storage Location 5710-712, W036
SGS REF No. 71199

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release YELLOW: If dispatched to interstate Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results

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Chain of Custody

No: 26375

Laboratory Quotation / Order No:

Job No: ECO0233AA Sheet 2 of 3

Dispatch to: (Address & Phone No.) SCS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 6/8/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Gunton	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	6/8/09	4:30pm	David	7/8/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No	Date Sampled	PAHs	TPHs	MAHs – BTEX	Metals: 8	pH	Sample Condition on Receipt
	Soil	250ml Jar	18 MS4-11-0.5-0.6	6/8/09				X		
			19 MS4-12-0.0-0.2					X	X	
			20 MS4-12-0.5-0.6					X		
			21 MS4-13-0.0-0.2					X		
			22 MS4-13-0.5-0.6					X		
			23 MS4-14-0.0-0.2					X	X	
			24 MS4-15-0.0-0.2					X		
			25 MS4-16-0.0-0.2					X		
			26 MS4-17-0.0-0.2					X		
			27 MS4-18-0.0-0.2					X	X	
			23 MS4-18-0.5-0.6					X		
			29 MS4-19-0.0-0.2					X		
			30 MS4-20-0.0-0.2					X		
			31 MS4-21-0.0-0.2					X	X	
			32 MS4-22-0.0-0.2					X		
			33 MS4-23-0.0-0.2					X		
			34 MS4-24-0.0-0.2					X		

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release **YELLOW:** If dispatched to interstate Lab. Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

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Chain of Custody

Laboratory Quotation / Order No:

No: 26376

Job No: ECO0233AA Sheet 3 of 3

Dispatch to: (Address & Phone No.) SCS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 6/8/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Gunton	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	6/8/09	4.30pm	David	7/8/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	~~[illegible]~~ = BTEX	Metals 8	pH	Sample Condition on Receipt
	Soil	250ml Jar	35 MS4-24-0.5-0.6	6/8/09				X		
			36 MS4-25-0.0-0.2					X		
			37 MS4-25-0.5-0.6					X		
			38 MS4-26-0.0-0.2					X		
			39 MS4-26A-0.0-0.2					X	X	
			40 MS4-26A-0.5-0.6					X		
			41 MS4-27-0.0-0.2					X		
			42 MS4-28-0.0-0.2					X		
			43 QC11					X		
			44 QC12					X		
	Water	1 Amber, 1 Metals, 2 Vials	45 WB6					X	X	
		1 Vial	46 TB8				X			

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

SAMPLE RECEIPT ADVICE (SRA)

7 August 2009

Client Details			**Laboratory Details**		
Requested By	:	**Chris Gunton**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Chris Gunton	Manager	:	Edward Ibrahim
Address	:	2/54 Northbourne Avenue PO Box 1986 CANBERRA ACT 2602	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	chris_gunton@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE71199**
Order Number	:	26374-6	No. of Samples	:	46
Samples	:	44 Soils, 2 Waters	Due Date	:	14/08/2009

Date Instructions Received : 7/08/2009
Sample Receipt Date : 7/8/09

Samples received in good order	:	YES	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice Pack
Sample containers provided by	:	Other Lab	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

The signed chain of custody will be returned to you with the original report.

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE71199
Project : EC00233AA

Summary of Samples and Requested Analysis

The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.
Please indicate ASAP if your request differs from these details.
Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.
Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep & Inorganics - All	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Moisture
1	MS4-1_0.0-0.2	x	x	X	X				X
2	MS4-1_0.5-0.6	x		X	X				X
3	MS4-2_0.0-0.2	x		X	X				X
4	MS4-2_0.5-0.6	x		X	X				X
5	MS4-3_0.0-0.2	x		X	X				X
6	MS4-3_0.5-0.6	x		X	X				X
7	MS4-4_0.0-0.2	x	x	X	X				X
8	MS4-4_0.5-0.6	x		X	X				X
9	MS4-5_0.0-0.2	x		X	X				X
10	MS4-5_0.5-0.6	x		X	X				X
11	MS4-6_0.0-0.2	x		X	X				X
12	MS4-6_0.5-0.6	x		X	X				X
13	MS4-7_0.0-0.2	x	x	X	X				X
14	MS4-8_0.0-0.2	x		X	X				X
15	MS4-9_0.0-0.2	x		X	X				X
16	MS4-10_0.0-0.2	x		X	X				X
17	MS4-11_0.0-0.2	x	x	X	X				X
18	MS4-11_0.5-0.6	x		X	X				X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71199
Project	:	EC00233AA			

Sample No.	Description	Metals Prep & Inorganics - All	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Moisture
19	MS4-12_0.0-0.2	x	x	X	X				X
20	MS4-12_0.5-0.6	x		X	X				X
21	MS4-13_0.0-0.2	x		X	X				X
22	MS4-13_0.5-0.6	x		X	X				X
23	MS4-14_0.0-0.2	x	x	X	X				X
24	MS4-15_0.0-0.2	x		X	X				X
25	MS4-16_0.0-0.2	x		X	X				X
26	MS4-17_0.0-0.2	x		X	X				X
27	MS4-18_0.0-0.2	x	x	X	X				X
28	MS4-18_0.5-0.6	x		X	X				X
29	MS4-19_0.0-0.2	x		X	X				X
30	MS4-20_0.0-0.2	x		X	X				X
31	MS4-21_0.0-0.2	x	x	X	X				X
32	MS4-22_0.0-0.2	x		X	X				X
33	MS4-23_0.0-0.2	x		X	X				X
34	MS4-24_0.0-0.2	x		X	X				X
35	MS4-24_0.5-0.6	x		X	X				X
36	MS4-25_0.0-0.2	x		X	X				X
37	MS4-25_0.5-0.6	x		X	X				X
38	MS4-26_0.0-0.2	x		X	X				X
39	MS4-26A_0.0-0.2	x	x	X	X				X
40	MS4-26A_0.5-0.6	x		X	X				X
41	MS4-27_0.0-0.2	x		X	X				X
42	MS4-28_0.0-0.2	x		X	X				X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE71199
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Moisture
43	QC11	x		X	X				X
44	QC12	x		X	X				X
45	WB6	x	x				X	X	
46	TB8					X			

Sample No.	Description
1	MS4-1_0.0-0.2
2	MS4-1_0.5-0.6
3	MS4-2_0.0-0.2
4	MS4-2_0.5-0.6
5	MS4-3_0.0-0.2
6	MS4-3_0.5-0.6
7	MS4-4_0.0-0.2
8	MS4-4_0.5-0.6
9	MS4-5_0.0-0.2
10	MS4-5_0.5-0.6
11	MS4-6_0.0-0.2
12	MS4-6_0.5-0.6
13	MS4-7_0.0-0.2
14	MS4-8_0.0-0.2
15	MS4-9_0.0-0.2

SGS

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71199
Project	:	EC00233AA			

Sample No.	Description
16	MS4-10_0.0-0.2
17	MS4-11_0.0-0.2
18	MS4-11_0.5-0.6
19	MS4-12_0.0-0.2
20	MS4-12_0.5-0.6
21	MS4-13_0.0-0.2
22	MS4-13_0.5-0.6
23	MS4-14_0.0-0.2
24	MS4-15_0.0-0.2
25	MS4-16_0.0-0.2
26	MS4-17_0.0-0.2
27	MS4-18_0.0-0.2
28	MS4-18_0.5-0.6
29	MS4-19_0.0-0.2
30	MS4-20_0.0-0.2
31	MS4-21_0.0-0.2
32	MS4-22_0.0-0.2
33	MS4-23_0.0-0.2
34	MS4-24_0.0-0.2
35	MS4-24_0.5-0.6
36	MS4-25_0.0-0.2
37	MS4-25_0.5-0.6
38	MS4-26_0.0-0.2
39	MS4-26A_0.0-0.2
40	MS4-26A_0.5-0.6
41	MS4-27_0.0-0.2
42	MS4-28_0.0-0.2
43	QC11
44	QC12

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71199
Project	:	EC00233AA			

Sample No.	Description
45	WB6
46	TB8

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Chain of Custody

No: 26378

Laboratory Quotation / Order No:

Job No: ECO0233AA Sheet 1 of 2

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 10/8/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Auston	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	10/8/09	1:30pm	David	11/8/09	

Comments	Sample Matrix	Container Type and Preservative		Sample No.	Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals 8	pH	OCP/OPP									Sample Condition on Receipt
	Soil	250ml Jar	1	MS4-29-0.0-0.2	7/8/09				X											
	↓	↓	2	MS4-30-0.0-0.2	↓				X	X										
			3	MS4-30-0.5-0.6					X											
			4	MS4-31-0.0-0.2					X											
			5	MS4-32-0.0-0.2					X											
			6	MS4-33-0.0-0.2					X											
			7	MS4-33-0.5-0.6					X											
			8	MS4-34-0.0-0.2					X	X										
			9	MS4-34-0.5-0.6					X											
			10	MS4-35-0.0-0.2					X											
			11	MS4-36-0.0-0.2					X											
			12	MS4-37-0.0-0.2					X											
			13	MS4-38-0.0-0.2					X											
			14	MS4-39-0.0-0.2					X											
			15	DC1					X		X									
			16	DC2					X		X									
			17	DC5					X		X									

SGS
Received 11/8/09
By D
Time 9 am
Samples intact Yes
Ice Cooler Pack
Temperature on Receipt 6 °C
Storage Location 5735-737, W054
SGS REF No. 71274

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

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Chain of Custody

No: 26379

Laboratory Quotation / Order No:

Job No: ECOC233AA Sheet 2 of 3

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Carbasso Date Dispatched: 10/8/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Gordon	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	10/8/09	1:30pm	David	11/8/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	BTEX	Metals 8	pH	OCP/OPP	Sample Condition on Receipt
	Soil	250ml Jar	18 DC6	7/8/09				X		X	
			19 DC7					X		X	
			20 DC8					X		X	
			21 DC9					X		X	
			22 DC10					X		X	
			23 QC13					X			
			24 QC14					X		X	
	Water	1 Amber, 1 Metals, 2 Vials	25 WB7					X	X		
		1 Vial	26 TB9				X				
	Soil	250ml Jar	27 DC13	10/8/09				X		X	
			28 DC12					X		X	
			29 DC11					X		X	
			30 DC3					X		X	
			31 DC4					X		X	
	Water	1 Vial	32 TB10				X				
			33 TS5				X				
		1 Amber, 1 Metals, 2 Vials	34 WB8					X		X	

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

SAMPLE RECEIPT ADVICE (SRA)

11 August 2009

Client Details			Laboratory Details		
Requested By	:	**Chris Gunton**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Chris Gunton	Manager	:	Edward Ibrahim
Address	:	2/54 Northbourne Avenue PO Box 1986 CANBERRA ACT 2602	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	chris_gunton@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE71274**
Order Number	:	26378-9	No. of Samples	:	34
Samples	:	28 Soils, 5 Waters	Due Date	:	18/08/2009

Date Instructions Received : 11/08/2009
Sample Receipt Date : 11/8/09

Samples received in good order	:	NO	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice Pack
Sample containers provided by	:	Other Lab	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

WB7 one vial received broken. DC11 not received

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liablility and to the clauses of indemnification.

The signed chain of custody will be returned to you with the original report.

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE71274
Project : EC00233AA

Summary of Samples and Requested Analysis
The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.
Please indicate ASAP if your request differs from these details.
Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.
Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep & Inorganics - All	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Moisture
1	MS4-29_0.0-0.2	x				X	X						X
2	MS4-30_0.0-0.2	x			x	X	X						X
3	MS4-30_0.5-0.6	x				X	X						X
4	MS4-31_0.0-0.2	x				X	X						X
5	MS4-32_0.0-0.2	x				X	X						X
6	MS4-33_0.0-0.2	x				X	X						X
7	MS4-33_0.5-0.6	x				X	X						X
8	MS4-34_0.0-0.2	x			x	X	X						X
9	MS4-34_0.5-0.6	x				X	X						X
10	MS4-35_0.0-0.2	x				X	X						X
11	MS4-36_0.0-0.2	x				X	X						X
12	MS4-37_0.0-0.2	x				X	X						X
13	MS4-38_0.0-0.2	x				X	X						X
14	MS4-39_0.0-0.2	x				X	X						X
15	DC1	x	X	X		X	X						X
16	DC2	x	X	X		X	X						X
17	DC5	x	X	X		X	X						X
18	DC6	x	X	X		X	X						X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71274
Project	:	EC00233AA			

Sample No.	Description	Metals Prep & Inorganics - All	OC Pesticides in Soil	OP Pesticides in Soil by GCMS	Inorganics	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	OC Pesticides in Water	OP Pesticides in Water by GCMS	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	Moisture
19	DC7	x	X	X		X	X						X
20	DC8	x	X	X		X	X						X
21	DC9	x	X	X		X	X						X
22	DC10	x	X	X		X	X						X
23	QC13	x				X	X						X
24	QC14	x	X	X		X	X						X
25	WB7	x			x						X	X	
26	TB9							X					
27	DC13	x	X	X		X	X						X
28	DC12	x	X	X		X	X						X
30	DC3	x	X	X		X	X						X
31	DC4	x	X	X		X	X						X
32	TB10							X					
33	TS5							X					
34	WB8	x							X	X	X	X	

Sample No.	Description
1	MS4-29_0.0-0.2
2	MS4-30_0.0-0.2
3	MS4-30_0.5-0.6
4	MS4-31_0.0-0.2

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE71274
Project : EC00233AA

Sample No.	Description
5	MS4-32_0.0-0.2
6	MS4-33_0.0-0.2
7	MS4-33_0.5-0.6
8	MS4-34_0.0-0.2
9	MS4-34_0.5-0.6
10	MS4-35_0.0-0.2
11	MS4-36_0.0-0.2
12	MS4-37_0.0-0.2
13	MS4-38_0.0-0.2
14	MS4-39_0.0-0.2
15	DC1
16	DC2
17	DC5
18	DC6
19	DC7
20	DC8
21	DC9
22	DC10
23	QC13
24	QC14
25	WB7
26	TB9
27	DC13
28	DC12
30	DC3
31	DC4
32	TB10
33	TS5
34	WB8

coffey

Chain of Custody

No: 26381

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 1 of 2

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 13/8/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Gunton Julian Howard	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	13/8/09	3:00pm	David	14/8/09	

Comments	Sample Matrix	Container Type and Preservative		Sample No.	Date Sampled	PAHs	TPHs	MAHs – BTEX	Metals 8	NAPP	NAC										Sample Condition on Receipt
	Soil	250ml Jar	1	MS1SP1	13/8/09				X	X	X										
	↓	↓	2	MS1SP2	↓					X	X										
			3	MS1SP3					X	X	X										
			4	MS1SP4						X	X										
			5	MS3SP1					X	X	X										
			6	MS3SP2						X	X										
			7	MS3SP3					X	X	X										
			8	MS4SP1					X	X	X										
			9	MS4SP2						X	X										
			10	MS4SP3					X	X	X										
			11	MS4SP4						X	X										
			12	MS4SP5					X	X	X										
			13	MS4SP6						X	X										
			14	MS4SP7					X	X	X										
			15	MS4SP8						X	X										
			16	MS4SP9					X	X	X										
			17	MS4SP10						X	X										

SGS
Received 14/8/09
By D
Time 9 am/pm
Samples intact yes/no
Ice Cooler Pack yes/no
Temperature on Receipt 6 °C
Storage Location S019-20, W087-88
SGS REF No. 71392

Special Laboratory Instructions: NAPP – Net Acid Producing Potential NAC – Net Acid Generation

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

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Chain of Custody

No: 26382

Laboratory Quotation / Order No:

Job No: ECO0233AA Sheet 2 of 2

Dispatch to: (Address & Phone No:) SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 13/8/09
Attention: Sample Receipts	Project Manager: Chris Gunton (report results to: Julian Howard	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	13/8/09	3:00pm	David	14/8/09	

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	BTEX	Metals 8	NAPP	NAG	OCP/OPP	Sulphate	Sample Condition on Receipt
	Soil	250ml Jar	18 QC15	13/8/09				X	X	X			
	Water	1 Amber, 1 Metals 2 Vials	19 SW1					X			X	X	
			20 SW2					X			X	X	
			21 SW3					X			X	X	
			22 QC16					X			X	X	
		1 Vial	23 TB11				X						

Special Laboratory instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

LABORATORY REPORT COVERSHEET

Date: 25 August 2009

To: Coffey Canberra
PO Box 1986
Canberra ACT 2602

Attention: Chris Gunton

Your Reference: Coffey ref EC00233AA SE71392
Laboratory Report No: CE64627

Samples Received: 17/08/2009
Samples / Quantity: 18 Soil/Rock

The above samples were received intact and analysed according to your written instructions. Unless otherwise stated, solid samples are reported on a dry weight basis and liquid samples as received.

Jon Dicker
Manager
CAIRNS

Shey Goddard
Administration Manager
CAIRNS

SGS Australia Pty Ltd ABN 44 000 964 278 | Environmental Services Unit 2, 58 Comport Street, Portsmith 4870 QLD Australia
t +61 (0)7 4035 5111 f +61 (0)7 4035 5122

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

Waste Rock - Acid Mine Drain Our Reference Your Reference Type of Sample Date Sampled Job Description/Project & No	Units	CE64627-1 MS1SP1 Soil 13/08/2009 SE71392-1	CE64627-2 MS1SP2 Soil 13/08/2009 SE71392-2	CE64627-3 MS1SP3 Soil 13/08/2009 SE71392-3
Date Extracted		19/08/2009	19/08/2009	19/08/2009
Date Analysed		19/08/2009	19/08/2009	19/08/2009
Aged EC (1:2)	µS/cm	65	64	91
pH (Paste)	pH Units	7.0	7.2	7.1
Total Sulfur #	% w/w	<0.005	<0.005	0.006
S_{HCl} #	% w/w	<0.005	<0.005	<0.005
Total Oxidisable Sulfur, TOS #	% w/w	<0.005	<0.005	<0.005
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	0.3	0.3	0.3
Acid Neutralisation Capacity	kgH_2SO_4/tonne	2.5	2.5	2.5
NAGP #	kg H_2SO_4/tonne	<0.5	<0.5	<0.5
NAGP (inc ANC) #	kg H_2SO_4/tonne	-2.4	-2.4	-2.3
pH $_{Ox}$	pH Units	5.8	6.2	6.1
Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

Waste Rock - Acid Mine Drain Our Reference Your Reference Type of Sample Date Sampled Job Description/Project & No	Units	CE64627-4 MS1SP4 Soil 13/08/2009 SE71392-4	CE64627-5 MS3SP1 Soil 13/08/2009 SE71392-5	CE64627-6 MS3SP2 Soil 13/08/2009 SE71392-6
Date Extracted		19/08/2009	19/08/2009	19/08/2009
Date Analysed		19/08/2009	19/08/2009	19/08/2009
Aged EC (1:2)	µS/cm	34	110	100
pH (Paste)	pH Units	6.9	8.8	8.9
Total Sulfur #	% w/w	<0.005	0.031	0.023
S_{HCl} #	% w/w	<0.005	0.006	<0.005
Total Oxidisable Sulfur, TOS #	% w/w	<0.005	0.025	0.020
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	0.3	90	75
Acid Neutralisation Capacity	kgH_2SO_4/tonne	2.5	880	730
NAGP #	kg H_2SO_4/tonne	<0.5	0.7	0.6
NAGP (inc ANC) #	kg H_2SO_4/tonne	-2.4	-881	-834
pH $_{Ox}$	pH Units	5.5	10.2	12.0
Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

Waste Rock - Acid Mine Drain Our Reference Your Reference Type of Sample Date Sampled Job Description/Project & No	Units	CE64627-7 MS3SP3 Soil 13/08/2009 SE71392-7	CE64627-8 MS4SP1 Soil 13/08/2009 SE71392-8	CE64627-9 MS4SP2 Soil 13/08/2009 SE71392-9
Date Extracted		19/08/2009	19/08/2009	19/08/2009
Date Analysed		19/08/2009	19/08/2009	19/08/2009
Aged EC (1:2)	µS/cm	73	230	420
pH (Paste)	pH Units	9.0	8.1	8.1
Total Sulfur #	% w/w	66	0.025	0.033
S_{HCl} #	% w/w	<0.005	<0.005	0.024
Total Oxidisable Sulfur, TOS #	% w/w	0.062	0.021	0.009
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	89	0.4	1.5
Acid Neutralisation Capacity	kgH_2SO_4/tonne	870	3.7	15
NAGP #	kg H_2SO_4/tonne	1.9	0.6	<0.5
NAGP (inc ANC) #	kg H_2SO_4/tonne	-868	-3.0	-14
pH $_{Ox}$	pH Units	12.0	7.5	8.1
Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

Waste Rock - Acid Mine Drain Our Reference Your Reference Type of Sample Date Sampled Job Description/Project & No	Units	CE64627-10 MS4SP3 Soil 13/08/2009 SE71392-10	CE64627-11 MS4SP4 Soil 13/08/2009 SE71392-11	CE64627-12 MS4SP5 Soil 13/08/2009 SE71392-12
Date Extracted		19/08/2009	19/08/2009	19/08/2009
Date Analysed		19/08/2009	19/08/2009	19/08/2009
Aged EC (1:2)	µS/cm	180	200	150
pH (Paste)	pH Units	8.4	8.3	8.2
Total Sulfur #	% w/w	<0.005	0.021	<0.005
S_{HCl} #	% w/w	<0.005	<0.005	<0.005
Total Oxidisable Sulfur, TOS #	% w/w	<0.005	0.018	<0.005
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	8.3	2.3	0.4
Acid Neutralisation Capacity	kgH_2SO_4/tonne	81	22	3.7
NAGP #	kg H_2SO_4/tonne	<0.5	0.5	<0.5
NAGP (inc ANC) #	kg H_2SO_4/tonne	-81	-22	-3.7
pH $_{Ox}$	pH Units	10.4	8.9	7.4
Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

Waste Rock - Acid Mine Drain Our Reference Your Reference Type of Sample Date Sampled Job Description/Project & No	Units	CE64627-13 MS4SP6 Soil 13/08/2009 SE71392-13	CE64627-14 MS4SP7 Soil 13/08/2009 SE71392-14	CE64627-15 MS4SP8 Soil 13/08/2009 SE71392-15
Date Extracted		19/08/2009	19/08/2009	19/08/2009
Date Analysed		19/08/2009	19/08/2009	19/08/2009
Aged EC (1:2)	µS/cm	160	250	210
pH (Paste)	pH Units	8.7	8.4	8.2
Total Sulfur #	% w/w	0.028	0.016	0.015
S_{HCl} #	% w/w	0.012	<0.005	0.007
Total Oxidisable Sulfur, TOS #	% w/w	0.015	0.012	0.008
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	19	0.3	0.4
Acid Neutralisation Capacity	kgH_2SO_4/tonne	190	2.5	3.7
NAGP #	kg H_2SO_4/tonne	<0.5	<0.5	<0.5
NAGP (inc ANC) #	kg H_2SO_4/tonne	-190	-2.1	-3.4
pH $_{Ox}$	pH Units	10.1	7.4	7.7
Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

Waste Rock - Acid Mine Drain Our Reference Your Reference Type of Sample Date Sampled Job Description/Project & No	Units	CE64627-16 MS4SP9 Soil 13/08/2009 SE71392-16	CE64627-17 MS4SP10 Soil 13/08/2009 SE71392-17	CE64627-18 QC15 Soil 13/08/2009 SE71392-18
Date Extracted		19/08/2009	19/08/2009	19/08/2009
Date Analysed		19/08/2009	19/08/2009	19/08/2009
Aged EC (1:2)	µS/cm	200	290	190
pH (Paste)	pH Units	7.4	8.0	7.9
Total Sulfur #	% w/w	0.037	<0.005	0.015
S_{HCl} #	% w/w	0.013	<0.005	<0.005
Total Oxidisable Sulfur, TOS #	% w/w	0.021	<0.005	0.012
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	0.9	6.8	0.4
Acid Neutralisation Capacity	kgH_2SO_4/tonne	8.6	66	3.7
NAGP #	kg H_2SO_4/tonne	0.6	<0.5	<0.5
NAGP (inc ANC) #	kg H_2SO_4/tonne	-7.9	-66	-3.3
pH $_{Ox}$	pH Units	7.8	8.7	7.4
Net Acid Generation pH7	kg H_2SO_4/tonne	<0.5	<0.5	<0.5

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

TEST PARAMETERS	UNITS	LOR	METHOD
Waste Rock - Acid Mine Drain			
Date Extracted			
Date Analysed			
Aged EC (1:2)	µS/cm	5	AN106
pH (Paste)	pH Units	0.1	AN212 CEI-400
Total Sulfur #	% w/w	0.005	ASSMAC_20A
S_{HCl} #	% w/w	0.005	ASSMAC_20B
Total Oxidisable Sulfur, TOS #	% w/w	0.005	Calculation
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	0.1	ASSMAC_19A1/AN214
Acid Neutralisation Capacity	kgH_2SO_4/tonne	0.5	ASSMAC_19A1/AN214
NAGP #	kg H_2SO_4/tonne	0.5	AN215 CEI-043
NAGP (inc ANC) #	kg H_2SO_4/tonne		Calculation
pH $_{Ox}$	pH Units	0.1	AN212 CEI-400
Net Acid Generation pH7	kg H_2SO_4/tonne	0.5	AN212 CEI-400

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

QUALITY CONTROL	UNITS	Blank	Duplicate Sm#	Duplicate Sample||Duplicate
Date Extracted		19/08/09	CE64627-1	19/08/2009 || 19/08/2009
Date Analysed		19/08/09	CE64627-1	19/08/2009 || 19/08/2009
Aged EC (1:2)	µS/cm	-	CE64627-1	65 || 64 || RPD: 2
pH (Paste)	pH Units	-	CE64627-1	7.0 || 7.0 || RPD: 0
Total Sulfur #	% w/w	<0.005	CE64627-1	<0.005 || <0.005
S_{HCl} #	% w/w	<0.005	CE64627-1	<0.005 || <0.005
Total Oxidisable Sulfur, TOS #	% w/w	<0.005	CE64627-1	<0.005 || <0.005
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	-	CE64627-1	0.3 || 0.3 || RPD: 0
Acid Neutralisation Capacity	kgH_2SO_4/tonne	-	CE64627-1	2.5 || 2.5 || RPD: 0
NAGP #	kg H_2SO_4/tonne	-	CE64627-1	<0.5 || <0.5
NAGP (inc ANC) #	kg H_2SO_4/tonne	-	CE64627-1	-2.4 || -2.4 || RPD: 0
pH $_{Ox}$	pH Units	3.8	CE64627-1	5.8 || 5.7 || RPD: 2
Net Acid Generation pH7	kg H_2SO_4/tonne	-	CE64627-1	<0.5 || <0.5
QUALTY CONTROL	UNITS	Blank	Duplicate Sm#	Duplicate Sample||Duplicate
Date Extracted		[NT]	CE64627-11	19/08/2009 || 19/08/2009
Date Analysed		[NT]	CE64627-11	19/08/2009 || 19/08/2009
Aged EC (1:2)	µS/cm	[NT]	CE64627-11	200 || 200 || RPD: 0
pH (Paste)	pH Units	[NT]	CE64627-11	8.3 || 8.3 || RPD: 0
Total Sulfur #	% w/w	[NT]	CE64627-11	0.021 || 0.021 || RPD: 0
S_{HCl} #	% w/w	[NT]	CE64627-11	<0.005 || <0.005

CLIENT: Coffey Canberra **Laboratory Report No:** CE64627
PROJECT: Coffey ref EC00233AA SE71392

LABORATORY REPORT

QUALTY CONTROL	UNITS	Blank	Duplicate Sm#	Duplicate Sample||Duplicate
Total Oxidisable Sulfur, TOS #	% w/w	[NT]	CE64627-11	0.018 || 0.018 || RPD: 0
Acid Neutralisation Capacity ANC_{BT}	% $CaCO_3$	[NT]	CE64627-11	2.3 || 2.1 || RPD: 9
Acid Neutralisation Capacity	kgH_2SO_4/tonne	[NT]	CE64627-11	22 || 21 || RPD: 5
NAGP #	kg H_2SO_4/tonne	[NT]	CE64627-11	0.5 || 0.5 || RPD: 0
NAGP (inc ANC) #	kg H_2SO_4/tonne	[NT]	CE64627-11	-22 || -20 || RPD: -10
pH_{Ox}	pH Units	[NT]	CE64627-11	8.9 || 9.0 || RPD: 1
Net Acid Generation pH7	kg H_2SO_4/tonne	[NT]	CE64627-11	<0.5 || <0.5

NOTES:
LOR - Limit of Reporting.

This test is not covered by our current NATA accreditation.

Analysis Date: **Between** 17/08/09 **and** 24/08/09

SGS Terms and Conditions are available from www.au.sgs.com

SAMPLE RECEIPT ADVICE (SRA)

14 August 2009

Client Details			Laboratory Details		
Requested By	:	**Chris Gunton**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Chris Gunton	Manager	:	Edward Ibrahim
Address	:	2/54 Northbourne Avenue PO Box 1986 CANBERRA ACT 2602	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	chris_gunton@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE71392**
Order Number	:	26381-2	No. of Samples	:	23
Samples	:	18 Rocks, 5 Waters	Due Date	:	25/08/2009

Date Instructions Received : 14/08/2009
Sample Receipt Date : 14/8/09

Samples received in good order	:	YES	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice Pack
Sample containers provided by	:	SGS	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

NAPP and NAG Subcontracted to SGS Cairns

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liablility and to the clauses of indemnification.

The signed chain of custody will be returned to you with the original report.

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE71392
Project	:	EC00233AA			

Summary of Samples and Requested Analysis

The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.

Please indicate ASAP if your request differs from these details.

Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.

Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep, soil, water, TCLP	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	OC Pesticides in Water	OP Pesticides in Water by GCMS	Anions in water	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	External	Moisture
1	MS1SP1	x	X	X							X	X
2	MS1SP2										X	
3	MS1SP3	x	X	X							X	X
4	MS1SP4										X	
5	MS3SP1	x	X	X							X	X
6	MS3SP2										X	
7	MS3SP3	x	X	X							X	X
8	MS4SP1	x	X	X							X	X
9	MS4SP2										X	
10	MS4SP3	x	X	X							X	X
11	MS4SP4										X	
12	MS4SP5	x	X	X							X	X
13	MS4SP6										X	
14	MS4SP7	x	X	X							X	X
15	MS4SP8										X	
16	MS4SP9	x	X	X							X	X
17	MS4SP10										X	
18	QC15	x	X	X							X	X

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE71392
Project : EC00233AA

Sample No.	Description	Metals Prep, soil, water, TCLP	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	BTEX in Water (µg/L)	OC Pesticides in Water	OP Pesticides in Water by GCMS	Anions in water	Trace HM (ICP-MS)-Dissolved	Mercury Cold Vapor/Hg Analyser	External	Moisture
19	SW1	x				X	X	X	X	X		
20	SW2	x				X	X	X	X	X		
21	SW3	x				X	X	X	X	X		
22	QC16	x				X	X	X	X	X		
23	TB11				X							

Sample No.	Description
1	MS1SP1
2	MS1SP2
3	MS1SP3
4	MS1SP4
5	MS3SP1
6	MS3SP2
7	MS3SP3
8	MS4SP1
9	MS4SP2
10	MS4SP3
11	MS4SP4
12	MS4SP5
13	MS4SP6
14	MS4SP7

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE71392
Project : EC00233AA

Sample No.	Description
15	MS4SP8
16	MS4SP9
17	MS4SP10
18	QC15
19	SW1
20	SW2
21	SW3
22	QC16
23	TB11

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Chain of Custody

No: 26306

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 1 of 3

Dispatch to: (Address & Phone No.) SGS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 25/11/09
Attention: Sample Receipts	Project Manager: (report results to) Julian Howard	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie	25/11/09	4.00pm	Daniel	26/11/09	9.00 am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: 8	Sample Condition on Receipt
1	Soil	250ml Jar	MS3-16-0.0-0.2	25/11/09				X	
2			MS3-17-0.0-0.2						
3			MS3-18-0.0-0.2					X	
4			MS3-19-0.0-0.2						
5			MS3-20-0.0-0.2						
6			MS3-21-0.0-0.2					X	
7			MS3-22-0.0-0.2						
8			MS3-23-0.0-0.2					X	
9			MS3-24-0.0-0.2						
10			MS3-25-0.0-0.2					X	
11			MS3-26-0.0-0.2						
12			MS3-27-0.0-0.2					X	
13			MS3-28-0.0-0.2					X	
14			MS3-29-0.0-0.2						
15			MS3-30-0.0-0.2					X	
16			MS3-31-0.0-0.2						
17			MS3-32-0.0-0.2					X	

SGS
Received 26 / 11 / 09
By Daniel
Time 9.00
Samples intact yes / no
Cooler yes / no
Temperature on Receipt
Storage Location 5018-671, W169
SGS REF No. 75A004

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

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Chain of Custody

Laboratory Quotation / Order No:

No: 26307

Job No: ECO0233AA Sheet 2 of 3

Dispatch to: (Address & Phone No.) SCS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 25/11/09
Attention: Sample Receipts	Project Manager: (report results to) Julian Howard	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie	25/11/09	4:00pm	Daniel	26/11/09	9:00am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs - BTEX	Metals: 8												Sample Condition on Receipt
18	Soil	250ml Jar	MS3-32-0.5-0.6	25/11/09																
19			MS3-33-0.0-0.2																	
20			MS3-34-0.0-0.2					X												
21			MS3-34-0.5-0.6																	
22			MS3-35-0.0-0.2					X												
23			MS3-35-0.5-0.6																	
24			MS4-40-0.0-0.2																	
25			MS4-41-0.0-0.2					X												
26			MS4-42-0.0-0.2																	
27			MS4-43-0.0-0.2					X												
28			MS4-44-0.0-0.2																	
29			MS4-45-0.0-0.2					X												
30			MS4-46-0.0-0.2																	
31			MS4-47-0.0-0.2					X												
32			MS4-48-0.0-0.2																	
33			MS4-49-0.0-0.2					X												
34	↓	↓	MS4-50-0.0-0.2	↓																

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection   Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

64220/9-08

coffey

Chain of Custody

Laboratory Quotation / Order No:

No: 26308

Job No: ECO0233AA Sheet 3 of 3

Dispatch to: (Address & Phone No.) SCS	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 25/11/09
Attention: Sample Receipts	Project Manager: (report results to) Julian Howard	Courier Service: TNT Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie	25/11/09	4.00pm	Daniel	26/11/09	900am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals 8												Sample Condition on Receipt
35	Soil	250ml Jar	NS4-S1-00-0.2	25/11/09				X												
36	↓	↓	QC100					X												
37	↓	↓	QC101																	
38	Water	Metals	WB	↓																

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

942/20/9 06

SAMPLE RECEIPT ADVICE (SRA)

26 November 2009

Client Details			**Laboratory Details**		
Requested By	:	**Julian Howard**			
Client	:	Coffey Environments Pty Ltd	Laboratory	:	SGS Environmental Services
Contact	:	Julian Howard	Manager	:	Edward Ibrahim
Address	:	17 Torrens St BRADDON ACT 2612	Address	:	Unit 16, 33 Maddox Street Alexandria NSW 2015
Email	:	julian_howard@coffey.com	Email	:	au.samplereceipt.sydney@sgs.com
Telephone	:	02 6248 7154	Telephone	:	61 2 8594 0400
Facsimile	:	02 6248 7157	Facsimile	:	61 2 8594 0499
Project	:	EC00233AA	Report No	:	**SE74004**
Order Number	:	26306-308	No. of Samples	:	38
Samples	:	37 Soils, 1 Water	Due Date	:	2/12/2009

Date Instructions Received : 26/11/2009
Sample Receipt Date : 26/11/2009

Samples received in good order	:	YES	Samples received in correct containers	:	YES
Samples received without headspace	:	YES	Sufficient quantity supplied	:	YES
Upon receipt sample temperature	:	Cool	Cooling Method	:	Ice
Sample containers provided by	:	SGS	Samples clearly Labelled	:	YES
Turnaround time requested	:	Standard	Completed documentation received	:	YES

Samples will be held for 1 month for water samples and 3 months for soil samples from date of receipt of samples, unless otherwise instructed.

Comments

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liablility and to the clauses of indemnification.

The signed chain of custody will be returned to you with the original report.

SAMPLE RECEIPT ADVICE (SRA) - continued

Client	:	Coffey Environments Pty Ltd	Report No	:	SE74004
Project	:	EC00233AA			

Summary of Samples and Requested Analysis

The table below represents SGS Environmental Service's understanding and interpretation of the customer supplied sample request.

Please indicate ASAP if your request differs from these details.

Testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.

Note that a small X in the table below indicates some testing has not been requested in the package.

Sample No.	Description	Metals Prep & Inorganics - All	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	Hold sample-NO test required	Moisture
1	MS3-16_0.0-0.2	X	X	X		X
2	MS3-17_0.0-0.2				X	
3	MS3-18_0.0-0.2	X	X	X		X
4	MS3-19_0.0-0.2				X	
5	MS3-20_0.0-0.2				X	
6	MS3-21_0.0-0.2	X	X	X		X
7	MS3-22_0.0-0.2				X	
8	MS3-23_0.0-0.2	X	X	X		X
9	MS3-24_0.0-0.2				X	
10	MS3-25_0.0-0.2	X	X	X		X
11	MS3-26_0.0-0.2				X	
12	MS3-27_0.0-0.2	X	X	X		X
13	MS3-28_0.0-0.2	X	X	X		X
14	MS3-29_0.0-0.2				X	
15	MS3-30_0.0-0.2	X	X	X		X
16	MS3-31_0.0-0.2				X	
17	MS3-32_0.0-0.2	X	X	X		X
18	MS3-32_0.5-0.6				X	

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE74004
Project : EC00233AA

Sample No.	Description	Metals Prep & Inorganics - All	Metals in Soil by ICP-OES	Mercury Cold Vapor/Hg Analyser	Hold sample-NO test required	Moisture
19	MS3-33_0.0-0.2				X	
20	MS3-34_0.0-0.2	X	X	X		X
21	MS3-34_0.5-0.6				X	
22	MS3-35_0.0-0.2	X	X	X		X
23	MS3-35_0.5-0.6				X	
24	MS4-40_0.0-0.2				X	
25	MS4-41_0.0-0.2	X	X	X		X
26	MS4-42_0.0-0.2				X	
27	MS4-43_0.0-0.2	X	X	X		X
28	MS4-44_0.0-0.2				X	
29	MS4-45_0.0-0.2	X	X	X		X
30	MS4-46_0.0-0.2				X	
31	MS4-47_0.0-0.2	X	X	X		X
32	MS4-48_0.0-0.2				X	
33	MS4-49_0.0-0.2	X	X	X		X
34	MS4-50_0.0-0.2				X	
35	MS4-51_0.0-0.2	X	X	X		X
36	QC100	X	X	X		X
37	QC101				X	
38	WB				X	

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd   Report No : SE74004
Project : EC00233AA

Sample No.	Description
1	MS3-16_0.0-0.2
2	MS3-17_0.0-0.2
3	MS3-18_0.0-0.2
4	MS3-19_0.0-0.2
5	MS3-20_0.0-0.2
6	MS3-21_0.0-0.2
7	MS3-22_0.0-0.2
8	MS3-23_0.0-0.2
9	MS3-24_0.0-0.2
10	MS3-25_0.0-0.2
11	MS3-26_0.0-0.2
12	MS3-27_0.0-0.2
13	MS3-28_0.0-0.2
14	MS3-29_0.0-0.2
15	MS3-30_0.0-0.2
16	MS3-31_0.0-0.2
17	MS3-32_0.0-0.2
18	MS3-32_0.5-0.6
19	MS3-33_0.0-0.2
20	MS3-34_0.0-0.2
21	MS3-34_0.5-0.6
22	MS3-35_0.0-0.2
23	MS3-35_0.5-0.6
24	MS4-40_0.0-0.2
25	MS4-41_0.0-0.2
26	MS4-42_0.0-0.2
27	MS4-43_0.0-0.2
28	MS4-44_0.0-0.2
29	MS4-45_0.0-0.2

SAMPLE RECEIPT ADVICE (SRA) - continued

Client : Coffey Environments Pty Ltd Report No : SE74004
Project : EC00233AA

Sample No.	Description
30	MS4-46_0.0-0.2
31	MS4-47_0.0-0.2
32	MS4-48_0.0-0.2
33	MS4-49_0.0-0.2
34	MS4-50_0.0-0.2
35	MS4-51_0.0-0.2
36	QC100
37	QC101
38	WB

ANALYTICAL REPORT

8 October 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Julian Howard**

Your Reference: EC00233AA - Additional Analysis

Our Reference: SE71199A

Samples: 2 Soils
Received: 7/8/09

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:

Edward Ibrahim
Laboratory Manager

Metals in TCLP Our Reference:	UNITS	SE71199A-40	SE71199A-41
Your Reference	-------------	MS4-26A_0.5-0.6	MS4-27_0.0-0.2
Sample Matrix	------------	Soil	Soil
Date Sampled		6/08/2009	6/08/2009
Depth			
Date Extracted (TCLP Preparation)		1/10/2009	1/10/2009
pH of soil for fluid# determ.	pH units	6.34	6.81
pH of soil for fluid # determ. (acid)	pH units	1.78	1.79
Extraction fluid used	-	1	1
pH of final Leachate	pH units	6.37	5.16
Date Extracted (Metals)		2/10/2009	2/10/2009
Date Analysed (Metals)		2/10/2009	2/10/2009
Arsenic	mg/L	<0.05	[NA]
Lead	mg/L	[NA]	370

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Method ID	Methodology Summary
AN006	Toxicity Characteristic Leaching Procedure (TCLP) - Preparation of leachates for assessing the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphase wastes. Based on USEPA 1311. For volatile analytes, Zero-Headspace Extraction Vessel (ZHE) is used. This method also meets the requirements of Australian Standard Leaching Procedure (ASLP) AS 4439.3-1997 Part 3.
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
SEM-010	Determination of elements by ICP-OES following appropriate sample preparation / digestion process. Based on USEPA 6010C / APHA 21st Edition, 3120B.

QUALITY CONTROL Metals in TCLP	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
pH of soil for fluid# determ.	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
pH of soil for fluid # determ. (acid)	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
Extraction fluid used	-		AN006	1	[NT]	[NT]	[NR]	[NR]
pH of final Leachate	pH units	0	AN101	4.93	[NT]	[NT]	[NR]	[NR]
Date Extracted (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Date Analysed (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Arsenic	mg/L	0.05	SEM-010	<0.05	[NT]	[NT]	LCS	96%
Lead	mg/L	0.02	SEM-010	<0.02	[NT]	[NT]	LCS	99%

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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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced:
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

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

ANALYTICAL REPORT

6 October 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Julian Howard**

Your Reference: EC00233AA - Additional Analysis

Our Reference: SE71167A

Samples: 1 Soil
Received: 6/8/09

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:

Huong Crawford
Metals Signatory

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Metals in TCLP Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167A-44 MP15_0.0-0.2 Soil 5/08/2009
Date Extracted (TCLP Preparation)		1/10/2009
pH of soil for fluid# determ.	pH units	5.64
pH of soil for fluid # determ. (acid)	pH units	1.65
Extraction fluid used	-	1
pH of final Leachate	pH units	5.07
Date Extracted (Metals)		2/10/2009
Date Analysed (Metals)		2/10/2009
Lead	mg/L	0.07

Method ID	Methodology Summary
AN006	Toxicity Characteristic Leaching Procedure (TCLP) - Preparation of leachates for assessing the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphase wastes. Based on USEPA 1311. For volatile analytes, Zero-Headspace Extraction Vessel (ZHE) is used. This method also meets the requirements of Australian Standard Leaching Procedure (ASLP) AS 4439.3-1997 Part 3.
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
SEM-010	Determination of elements by ICP-OES following appropriate sample preparation / digestion process. Based on USEPA 6010C / APHA 21st Edition, 3120B.

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QUALITY CONTROL Metals in TCLP	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
pH of soil for fluid# determ.	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
pH of soil for fluid # determ. (acid)	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
Extraction fluid used	-		AN006	1	[NT]	[NT]	[NR]	[NR]
pH of final Leachate	pH units	0	AN101	4.93	[NT]	[NT]	[NR]	[NR]
Date Extracted (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Date Analysed (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Lead	mg/L	0.02	SEM-010	<0.02	[NT]	[NT]	LCS	99%

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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced:
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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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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ANALYTICAL REPORT

6 October 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Julian Howard**

Your Reference: EC00233AA - Additional Analysis

Our Reference: SE70984A

Samples: 2 Soils
Received: 29/07/09

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:

Huong Crawford
Metals Signatory

Metals in TCLP Our Reference:	UNITS	SE70984A-58	SE70984A-87
Your Reference	-------------	RE34_0.0-0.2	MS3-8_0.0-0.2
Sample Matrix	------------	Soil	Soil
Date Sampled		27/07/2009	28/07/2009
Date Extracted (TCLP Preparation)		1/10/2009	1/10/2009
pH of soil for fluid# determ.	pH units	6.03	6.95
pH of soil for fluid # determ. (acid)	pH units	1.60	1.62
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.05	6.17
Date Extracted (Metals)		2/10/2009	2/10/2009
Date Analysed (Metals)		2/10/2009	2/10/2009
Arsenic	mg/L	<0.05	0.44
Cadmium	mg/L	[NA]	0.18
Lead	mg/L	[NA]	0.16

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Method ID	Methodology Summary
AN006	Toxicity Characteristic Leaching Procedure (TCLP) - Preparation of leachates for assessing the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphase wastes. Based on USEPA 1311. For volatile analytes, Zero-Headspace Extraction Vessel (ZHE) is used. This method also meets the requirements of Australian Standard Leaching Procedure (ASLP) AS 4439.3-1997 Part 3.
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
SEM-010	Determination of elements by ICP-OES following appropriate sample preparation / digestion process. Based on USEPA 6010C / APHA 21st Edition, 3120B.

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QUALITY CONTROL Metals in TCLP	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
pH of soil for fluid# determ.	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
pH of soil for fluid # determ. (acid)	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
Extraction fluid used	-		AN006	1	[NT]	[NT]	[NR]	[NR]
pH of final Leachate	pH units	0	AN101	4.93	[NT]	[NT]	[NR]	[NR]
Date Extracted (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Date Analysed (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Arsenic	mg/L	0.05	SEM-010	<0.05	[NT]	[NT]	LCS	96%
Cadmium	mg/L	0.005	SEM-010	<0.005	[NT]	[NT]	LCS	101%
Lead	mg/L	0.02	SEM-010	<0.02	[NT]	[NT]	LCS	99%

SGS Australia Pty Ltd
ABN 44 000 964 278

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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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced:
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
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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

SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services Unit 16/33 Maddox Street Alexandria NSW 2015 Australia
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ANALYTICAL REPORT

6 October 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Julian Howard**

Your Reference: EC00233AA - Additional Analysis

Our Reference: SE71392A   Samples: 2 Rocks
Received: 14/8/09

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:

Huong Crawford
Metals Signatory

This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
NATA accredited laboratory 2562 (4354).
This report must not be reproduced except in full.

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Metals in TCLP Our Reference:	UNITS	SE71392A-8	SE71392A-16
Your Reference	-------------	MS4SP1	MS4SP9
Sample Matrix	------------	Rock	Rock
Date Sampled		13/08/2009	13/08/2009
Date Extracted (TCLP Preparation)		2/10/2009	2/10/2009
pH of soil for fluid# determ.	pH units	5.87	5.37
pH of soil for fluid # determ. (acid)	pH units	1.59	1.63
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.46	5.16
Date Extracted (Metals)		2/10/2009	2/10/2009
Date Analysed (Metals)		2/10/2009	2/10/2009
Arsenic	mg/L	<0.05	[NA]
Cadmium	mg/L	1.7	[NA]
Lead	mg/L	[NA]	500
Zinc	mg/L	490	[NA]

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Method ID	Methodology Summary
AN006	Toxicity Characteristic Leaching Procedure (TCLP) - Preparation of leachates for assessing the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphase wastes. Based on USEPA 1311. For volatile analytes, Zero-Headspace Extraction Vessel (ZHE) is used. This method also meets the requirements of Australian Standard Leaching Procedure (ASLP) AS 4439.3-1997 Part 3.
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
SEM-010	Determination of elements by ICP-OES following appropriate sample preparation / digestion process. Based on USEPA 6010C / APHA 21st Edition, 3120B.

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QUALITY CONTROL Metals in TCLP	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
pH of soil for fluid# determ.	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
pH of soil for fluid # determ. (acid)	pH units	0	AN101	[NT]	[NT]	[NT]	[NR]	[NR]
Extraction fluid used	-		AN006	1	[NT]	[NT]	[NR]	[NR]
pH of final Leachate	pH units	0	AN101	4.93	[NT]	[NT]	[NR]	[NR]
Date Extracted (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Date Analysed (Metals)				2/10/2009	[NT]	[NT]	LCS	2/10/2009
Arsenic	mg/L	0.05	SEM-010	<0.05	[NT]	[NT]	LCS	96%
Cadmium	mg/L	0.005	SEM-010	<0.005	[NT]	[NT]	LCS	101%
Lead	mg/L	0.02	SEM-010	<0.02	[NT]	[NT]	LCS	99%
Zinc	mg/L	0.01	SEM-010	<0.010	[NT]	[NT]	LCS	99%

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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced:
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

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

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coffey

Chain of Custody

No: 26366

Laboratory Quotation / Order No:

Job No: ECOO233AA Sheet 1 of 1

Dispatch to: (Address & Phone No.) MCT	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 30/7/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Cunton	Courier Service: TNT Consignment Note No: 309 609 257

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas			Rofgd Rep: 249508	31/7	9.00

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: 8	pH											Sample Condition on Receipt
	Soil	250ml Jar	QC6A	30/7/09				X	X											
	↓	↓	QC7A	↓				X	X											

Analyses Required

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

64220/9-06

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

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3-5 Kingston Town Close
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Phone : 03 9564 7055
NATA Site # 1254

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1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra
ACT 2609
Site: EC00233AA

Report Number: 249508-V1 Page 1 of 4
Order Number:
Date Received: Jul 31, 2009
Date Sampled: Jul 30, 2009
Date Reported: Aug 6, 2009
Contact: Chris Gunton

Methods

- USEPA 6010B Heavy Metals & USEPA 7470/71 Mercury
- Method 102 - ANZECC - % Moisture
- APHA 4500 pH by Direct Measurement

Comments

Notes

Authorised

Report Number: 249508-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Glenn Jackson
Client Manager

Tammy Lakeland
Chief Inorganic Chemist

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 20-110%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-110%

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 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

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC6A**	**QC7A**
2/54 Northbourne Avenue	**Lab Number**		**M09-JL12261**	**M09-JL12262**
Canberra	**Matrix**		**Soil**	**Soil**
ACT 2609	**Sample Date**		**Jul 30, 2009**	**Jul 30, 2009**
Analysis Type	**LOR**	**Units**		
% Moisture	0.1	%	15	8.8
pH (1:5 Aqueous extract)	0.1	units	6.5	6.2
Heavy Metals				
Arsenic	2.0	mg/kg	6.4	4.9
Cadmium	0.5	mg/kg	< 0.5	< 0.5
Chromium	5	mg/kg	19	25
Copper	5	mg/kg	22	13
Lead	5	mg/kg	5.6	15
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	32	30
Zinc	5	mg/kg	38	86

COMMENTS:

Coffey Environments Pty Ltd ACT	**Client Sample ID**	**QC6A**	**QC6A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
2/54 Northbourne Avenue	**Lab Number**	**09-JL12261**	**09-JL12261**	**09-JL12261**	**09-JL12261**	**Batch**	**Batch**
Canberra	**QA Description**		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
ACT 2609	**Matrix**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Jul 30, 2009**	**Jul 30, 2009**	**Jul 30, 2009**	**Jul 30, 2009**	**Jul 30, 2009**	**Jul 30, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
pH (1:5 Aqueous extract)		-	-	3.0	-	-	-
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		6.4	8.4	27	99	97	< 2
Cadmium		< 0.5	< 0.5	< 1	99	97	< 0.5
Chromium		19	24	25	103	103	< 5
Copper		22	16	34	97	100	< 5
Lead		5.6	7.4	27	86	93	< 5
Mercury		-	-	< 1	79	87	< 0.1
Nickel		32	38	16	99	98	< 5
Zinc		38	44	14	90	97	< 5

COMMENTS:

coffey

Chain of Custody

No: 26360

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 1 of 1

Dispatch to: (Address & Phone No.) MGT	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 28/7/09
Attention: Sample Receipts	Project Manager (report results to): Chris Gunton	Courier Service: TNT Consignment Note No: 349609635

Relinquished by	Date	Time	Received by	Date	Time
Charlie Lucas	28/7/09	5-00pm	John - MGT	31/7	9 am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs + BTEX	Metals: 8	OCPs/OPPs	pH	Sample Condition on Receipt
	Soil	250ml Jar	QC2A	24/7/09				X	X		
	↓	↓	QC3A	27/7/09				X			
			QC4A	28/7/09	X					X	
			QC5A	28/7/09	X			X			

Special Laboratory Instructions: Analysis to be advised

MGT Report # 249512

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign ... YELLOW: If despatched to external Lab, Lab to sign on receipt and fax back to Coffey BLUE: To be retained with results

mgt Environmental

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CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra
ACT 2609
Site: EC00233AA

Report Number: 249512-A-V1
Order Number:
Date Received: Jul 31, 2009
Date Sampled: Jul 24, 2009
Date Reported: Aug 7, 2009
Contact: Chris Gunton

Methods

- USEPA 8141A Organophosphorus Pesticides
- USEPA 8081A Organochlorine Pesticides
- USEPA 8270C Polycyclic Aromatic Hydrocarbons
- USEPA 6010B Heavy Metals & USEPA 7470/71 Mercury
- Method 102 - ANZECC - % Moisture
- APHA 4500 pH by Direct Measurement

Comments

Notes

Authorised

Report Number: 249512-A-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Onur Mehmet
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Tammy Lakeland
Chief Inorganic Chemist

GLOSSARY OF TERMS

UNITS

mg/kg	milligrams per Kilogram	**mg/l**	milligrams per litre
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ppb	Parts per billion	**%**	Percentage
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Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-110%

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REPORT SPECIFIC NOTES

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC2A**	**QC3A**	**QC4A**	**QC5A**
2/54 Northbourne Avenue	**Lab Number**		**M09-JL12275**	**M09-JL12276**	**M09-JL12277**	**M09-JL12278**
Canberra	**Matrix**		**Soil**	**Soil**	**Soil**	**Soil**
ACT 2609	**Sample Date**		**Jul 24, 2009**	**Jul 27, 2009**	**Jul 28, 2009**	**Jul 28, 2009**
Analysis Type	**LOR**	**Units**				
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.1	mg/kg	-	-	< 0.1	< 0.1
Acenaphthylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Anthracene	0.1	mg/kg	-	-	< 0.1	< 0.1
Benz(a)anthracene	0.1	mg/kg	-	-	< 0.1	< 0.1
Benzo(a)pyrene	0.1	mg/kg	-	-	< 0.1	< 0.1
Benzo(b)fluoranthene	0.1	mg/kg	-	-	< 0.1	< 0.1
Benzo(g.h.i)perylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Benzo(k)fluoranthene	0.1	mg/kg	-	-	< 0.1	< 0.1
Chrysene	0.1	mg/kg	-	-	< 0.1	< 0.1
Dibenz(a.h)anthracene	0.1	mg/kg	-	-	< 0.1	< 0.1
Fluoranthene	0.1	mg/kg	-	-	< 0.1	< 0.1
Fluorene	0.1	mg/kg	-	-	< 0.1	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	-	-	< 0.1	< 0.1
Naphthalene	0.1	mg/kg	-	-	< 0.1	< 0.1
Phenanthrene	0.1	mg/kg	-	-	< 0.1	< 0.1
Pyrene	0.1	mg/kg	-	-	< 0.1	< 0.1
Total PAH	0.1	mg/kg	-	-	< 0.1	< 0.1
p-Terphenyl-d14 (surr.)	1	%	-	-	114	118
2-Fluorobiphenyl (surr.)	1	%	-	-	119	123
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	-	-	-

COMMENTS:

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC2A**	**QC3A**	**QC4A**	**QC5A**
2/54 Northbourne Avenue	**Lab Number**		**M09-JL12275**	**M09-JL12276**	**M09-JL12277**	**M09-JL12278**
Canberra	**Matrix**		**Soil**	**Soil**	**Soil**	**Soil**
ACT 2609	**Sample Date**		**Jul 24, 2009**	**Jul 27, 2009**	**Jul 28, 2009**	**Jul 28, 2009**
Analysis Type	**LOR**	**Units**				
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	%	113	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	93	-	-	-
Organophosphorous Pesticides						
Bolstar	0.2	mg/kg	< 0.2	-	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	-	-
Demeton-O	0.2	mg/kg	< 0.2	-	-	-
Diazinon	0.2	mg/kg	< 0.2	-	-	-
Dichlorvos	0.2	mg/kg	< 0.2	-	-	-
Disulfoton	0.2	mg/kg	< 0.2	-	-	-
Ethion	0.2	mg/kg	< 0.2	-	-	-
Ethoprop	0.2	mg/kg	< 0.2	-	-	-
Fenitrothion	0.2	mg/kg	< 0.2	-	-	-
Fensulfothion	0.2	mg/kg	< 0.5	-	-	-
Fenthion	0.2	mg/kg	< 0.2	-	-	-
Merphos	0.2	mg/kg	< 0.2	-	-	-
Methyl azinphos	0.2	mg/kg	< 0.5	-	-	-
Methyl parathion	0.2	mg/kg	< 0.2	-	-	-
Mevinphos	0.2	mg/kg	< 0.2	-	-	-

COMMENTS:

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC2A**	**QC3A**	**QC4A**	**QC5A**
2/54 Northbourne Avenue	**Lab Number**		**M09-JL12275**	**M09-JL12276**	**M09-JL12277**	**M09-JL12278**
Canberra	**Matrix**		**Soil**	**Soil**	**Soil**	**Soil**
ACT 2609	**Sample Date**		**Jul 24, 2009**	**Jul 27, 2009**	**Jul 28, 2009**	**Jul 28, 2009**
Analysis Type	**LOR**	**Units**				
Naled	0.2	mg/kg	< 0.2	-	-	-
Phorate	0.2	mg/kg	< 0.2	-	-	-
Ronnel	0.2	mg/kg	< 0.2	-	-	-
Tokuthion	0.2	mg/kg	< 0.2	-	-	-
Trichloronate	0.2	mg/kg	< 0.2	-	-	-
Triphenylphosphate (surr.)	1	%	93	-	-	-
% Moisture	0.1	%	17	8.8	26	13
pH (1:5 Aqueous extract)	0.1	units	-	-	8.0	-
Heavy Metals						
Arsenic	2.0	mg/kg	8.4	160	-	1800
Cadmium	0.5	mg/kg	< 0.5	0.7	-	14
Chromium	5	mg/kg	19	23	-	25
Copper	5	mg/kg	20	39	-	93
Lead	5	mg/kg	16	240	-	1600
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Nickel	5	mg/kg	24	25	-	17
Zinc	5	mg/kg	63	390	-	2800

COMMENTS:

Coffey Environments Pty Ltd ACT

2/54 Northbourne Avenue
Canberra

ACT 2609

	Client Sample ID	**QC2A**	**QC2A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**09-JL12275**	**09-JL12275**	**09-JL12275**	**09-JL12275**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDD		< 0.05	< 0.05	< 1	82	120	< 0.05
4.4'-DDE		< 0.05	< 0.05	< 1	80	127	< 0.05
4.4'-DDT		< 0.05	< 0.05	< 1	73	124	< 0.05
a-BHC		< 0.05	< 0.05	< 1	90	124	< 0.05
Aldrin		< 0.05	< 0.05	< 1	89	118	< 0.05
b-BHC		< 0.05	< 0.05	< 1	81	127	< 0.05
Chlordane		< 0.1	< 0.1	< 1	-	-	< 0.1
d-BHC		< 0.05	< 0.05	< 1	82	111	< 0.05
Dieldrin		< 0.05	< 0.05	< 1	84	129	< 0.05
Endosulfan I		< 0.05	< 0.05	< 1	82	129	< 0.05
Endosulfan II		< 0.05	< 0.05	< 1	76	125	< 0.05
Endosulfan sulphate		< 0.05	< 0.05	< 1	73	124	< 0.05
Endrin		< 0.05	< 0.05	< 1	79	112	< 0.05
Endrin aldehyde		< 0.05	< 0.05	< 1	71	113	< 0.05
Endrin ketone		< 0.05	< 0.05	< 1	80	119	< 0.05
g-BHC (Lindane)		< 0.05	< 0.05	< 1	88	121	< 0.05
Heptachlor		< 0.05	< 0.05	< 1	76	115	< 0.05
Heptachlor epoxide		< 0.05	< 0.05	< 1	85	127	< 0.05
Hexachlorobenzene		< 0.05	< 0.05	< 1	92	127	< 0.05
Methoxychlor		< 0.05	< 0.05	< 1	73	121	< 0.05
Toxophene		< 0.1	< 0.1	< 1	-	-	< 0.1
Organophosphorous Pesticides							
Bolstar		< 0.2	< 0.2	< 1	-	-	< 0.2
Chlorpyrifos		< 0.2	< 0.2	< 1	-	-	< 0.2
Demeton-O		< 0.2	< 0.2	< 1	-	-	< 0.2
Diazinon		< 0.2	< 0.2	< 1	74	83	< 0.2
Dichlorvos		< 0.2	< 0.2	< 1	-	-	< 0.2
Disulfoton		< 0.2	< 0.2	< 1	-	-	< 0.2

COMMENTS:

Melbourne
3-5 Kingston Town Close
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Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra

ACT 2609

	Client Sample	**QC2A**	**QC2A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**09-JL12275**	**09-JL12275**	**09-JL12275**	**09-JL12275**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**	**Jul 24, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Organophosphorous Pesticides							
Ethion		< 0.2	< 0.2	< 1	75	99	< 0.2
Ethoprop		< 0.2	< 0.2	< 1	-	-	< 0.2
Fenitrothion		< 0.2	< 0.2	< 1	76	96	< 0.2
Fensulfothion		< 0.5	< 0.5	< 1	-	-	< 0.2
Fenthion		< 0.2	< 0.2	< 1	-	-	< 0.2
Merphos		< 0.2	< 0.2	< 1	-	-	< 0.2
Methyl azinphos		< 0.5	< 0.5	< 1	-	-	< 0.2
Methyl parathion		< 0.2	< 0.2	< 1	82	123	< 0.2
Mevinphos		< 0.2	< 0.2	< 1	85	117	< 0.2
Naled		< 0.2	< 0.2	< 1	-	-	< 0.2
Phorate		< 0.2	< 0.2	< 1	-	-	< 0.2
Ronnel		< 0.2	< 0.2	< 1	-	-	< 0.2
Tokuthion		< 0.2	< 0.2	< 1	-	-	< 0.2
Trichloronate		< 0.2	< 0.2	< 1	-	-	< 0.2
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		3.1	4.8	20	100	93	< 2
Cadmium		< 0.5	< 0.5	< 1	99	99	< 0.5
Chromium		9.6	14	12	97	101	< 5
Copper		16	21	5.5	103	100	< 5
Lead		6.9	7.1	2.9	116	98	< 5
Mercury		< 0.1	< 0.1	< 1	79	87	< 0.1
Nickel		6.0	8.5	12	88	99	< 5
Zinc		80	100	2.3	85	96	< 5

COMMENTS:

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Coffey Environments Pty Ltd ACT 2/54 Northbourne Avenue Canberra ACT 2609	**Client Sample ID**	**QC4A**	**QC4A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**09-JL12277**	**09-JL12277**	**09-JL12277**	**09-JL12277**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Jul 28, 2009**	**Jul 28, 2009**	**Jul 28, 2009**	**Jul 28, 2009**	**Jul 28, 2009**	**Jul 28, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
pH (1:5 Aqueous extract)		6.2	6.0	3.0	-	-	-
Polycyclic Aromatic Hydrocarbons		Batch	Batch	Batch	Batch		
Acenaphthene		< 0.1	< 0.1	< 1	106	98	< 0.1
Acenaphthylene		0.3	0.3	3.0	-	93	< 0.1
Anthracene		0.5	0.5	10	-	92	< 0.1
Benz(a)anthracene		2.5	2.3	8.0	-	81	< 0.1
Benzo(a)pyrene		3.0	3.0	1.0	-	87	< 0.1
Benzo(b)fluoranthene		3.0	3.2	6.0	-	82	< 0.1
Benzo(g.h.i)perylene		2.7	2.0	30	-	91	< 0.1
Benzo(k)fluoranthene		1.5	1.5	1.0	-	89	< 0.1
Chrysene		2.4	2.2	7.0	-	99	< 0.1
Dibenz(a.h)anthracene		0.6	0.6	12	-	80	< 0.1
Fluoranthene		4.0	3.7	8.0	-	99	< 0.1
Fluorene		0.2	0.1	47	-	96	< 0.1
Indeno(1.2.3-cd)pyrene		2.0	1.9	8.0	-	83	< 0.1
Naphthalene		0.2	0.1	13	-	95	< 0.1
Phenanthrene		2.0	1.5	26	-	90	< 0.1
Pyrene		4.4	4.0	10	70	102	< 0.1

COMMENTS:

coffey

Chain of Custody

No: 26371

Laboratory Quotation / Order No:

Job No:

Sheet of

Dispatch to: (Address & Phone No.)	Sampled by:	Consigning Officer: Date Dispatched:
Attention:	Project Manager: (report results to)	Courier Service: Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			Rob... Rep: 249831	6/8/09	9.15am

Comments	Sample Matrix	Container Type and Preservative	Sample No	Date Sampled	PAHs	TPHs	MAHs - BTEX	Metals 8	OCP	Cyanide	Sulfide	Sample Condition on Receipt
	Soil	250ml Jar	QC8A	4/8/09				X	X	X	X	
	↓		QC9A	5/8/09				X	X	X	X	
			QC10A					X	X			

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be retained with ...

63220 8-08

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CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra
ACT 2609
Site: EC00233AA

Report Number: 249831-A-V1 Page 1 of 6
Order Number:
Date Received: Aug 06, 2009
Date Sampled: Aug 4, 2009
Date Reported: Aug 14, 2009
Contact: Chris Gunton

Methods

- USEPA 8081A Organochlorine Pesticides
- USEPA 6010B Heavy Metals & USEPA 7470/71 Mercury
- USEPA 9010B Cyanide
- APHA 4500-S C & D - Sulphide
- Method 102 - ANZECC - % Moisture

Comments

Notes

Authorised

Report Number: 249831-A-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Onur Mehmet
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Tammy Lakeland
Chief Inorganic Chemist

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 20-110%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-110%

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 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

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC8A**	**QC9A**	**QC10A**
2/54 Northbourne Avenue	**Lab Number**		**M09-AU01518**	**M09-AU01519**	**M09-AU01520**
Canberra	**Matrix**		**Soil**	**Soil**	**Soil**
ACT 2609	**Sample Date**		**Aug 4, 2009**	**Aug 5, 2009**	**Aug 5, 2009**
Analysis Type	**LOR**	**Units**			
Organochlorine Pesticides					
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Chlordane	0.1	mg/kg	< 0.1	< 0.1	< 0.1
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Toxophene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	103	112	107
Tetrachloro-m-xylene (surr.)	1	%	78	79	82
% Moisture	0.1	%	13	8.3	11
Cyanide (total)	5	mg/kg	< 5	< 5	-
Sulphide (S)	1	mg/kg	< 1	< 1	-
Heavy Metals					
Arsenic	2.0	mg/kg	8.3	37	16
Cadmium	0.5	mg/kg	< 0.5	1.9	< 0.5

COMMENTS:

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC8A**	**QC9A**	**QC10A**
2/54 Northbourne Avenue	**Lab Number**		**M09-AU01518**	**M09-AU01519**	**M09-AU01520**
Canberra	**Matrix**		**Soil**	**Soil**	**Soil**
ACT 2609	**Sample Date**		**Aug 4, 2009**	**Aug 5, 2009**	**Aug 5, 2009**
Analysis Type	**LOR**	**Units**			
Chromium	5	mg/kg	28	29	22
Copper	5	mg/kg	11	23	28
Lead	5	mg/kg	97	350	75
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	16	26	33
Zinc	5	mg/kg	150	750	380

COMMENTS:

Coffey Environments Pty Ltd ACT	Client Sample ID	QC8A	QC8A	RPD	SPIKE	LCS	Method blank
2/54 Northbourne Avenue	Lab Number	09-AU01518	09-AU01518	09-AU01518	09-AU01518	Batch	Batch
Canberra	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
ACT 2609	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	Aug 4, 2009	Aug 4, 2009	Aug 4, 2009	Aug 4, 2009	Aug 4, 2009	Aug 4, 2009
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Cyanide (total)		< 5	< 5	< 1	105	103	< 5
Sulphide (S)		< 1	< 1	< 1	-	-	< 1
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDD		< 0.05	< 0.05	< 1	111	111	< 0.05
4.4'-DDE		< 0.05	< 0.05	< 1	113	107	< 0.05
4.4'-DDT		< 0.05	< 0.05	< 1	112	100	< 0.05
a-BHC		< 0.05	< 0.05	< 1	113	104	< 0.05
Aldrin		< 0.05	< 0.05	< 1	103	102	< 0.05
b-BHC		< 0.05	< 0.05	< 1	106	97	< 0.05
Chlordane		< 0.1	< 0.1	< 1	-	-	< 0.1
d-BHC		< 0.05	< 0.05	< 1	125	112	< 0.05
Dieldrin		< 0.05	< 0.05	< 1	114	109	< 0.05
Endosulfan I		< 0.05	< 0.05	< 1	114	115	< 0.05
Endosulfan II		< 0.05	< 0.05	< 1	105	95	< 0.05
Endosulfan sulphate		< 0.05	< 0.05	< 1	109	104	< 0.05
Endrin		< 0.05	< 0.05	< 1	127	110	< 0.05
Endrin aldehyde		< 0.05	< 0.05	< 1	111	109	< 0.05
Endrin ketone		< 0.05	< 0.05	< 1	98	103	< 0.05
g-BHC (Lindane)		< 0.05	< 0.05	< 1	114	104	< 0.05
Heptachlor		< 0.05	< 0.05	< 1	105	73	< 0.05
Heptachlor epoxide		< 0.05	< 0.05	< 1	110	101	< 0.05
Hexachlorobenzene		< 0.05	< 0.05	< 1	126	74	< 0.05
Methoxychlor		< 0.05	< 0.05	< 1	84	121	< 0.05
Toxophene		< 0.1	< 0.1	< 1	-	-	< 0.1
Heavy Metals		Batch	Batch	Batch	Batch		
Mercury		< 0.1	< 0.1	< 1	82	102	< 0.1

COMMENTS:

Coffey Environments Pty Ltd ACT	**Client Sample ID**			**RPD**	**SPIKE**	**LCS**	**Method blank**
2/54 Northbourne Avenue	**Lab Number**	**249831_1**	**249831_1**	**249831_1**	**249831_1**	**Batch**	**Batch**
Canberra	**QA Description**		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
ACT 2609	**Matrix**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		5.8	4.4	26	92	107	< 2
Cadmium		< 0.5	< 0.5	< 1	101	106	< 0.5
Chromium		22	26	< 1	105	115	< 5
Copper		11	19	47	90	107	< 5
Lead		18	18	1.8	99	105	< 5
Nickel		18	16	8.6	84	110	< 5
Zinc		39	36	7.3	77	107	< 5

COMMENTS:

coffey

Chain of Custody

No: 26377

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 1 of 1

Dispatch to: (Address & Phone No.) MGT

Sampled by: Charlie Lucas

Consigning Officer: Canberra

Date Dispatched: 6/8/09

Attention: Sample Receipts

Project Manager: (report results to) Chris Cunton

Courier Service: TNT

Consignment Note No: 309 609 270

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	6/8/09	4:30pm	Rep: 249970 mgt	7/8	9:10am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: 8												Sample Condition on Receipt
	Soil	250ml Jar	QC11A	6/8/09				X												
	↓	↓	QC12A	↓				X												

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab. Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results

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Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra
ACT 2609
Site: EC00233AA

Report Number: 249970-A-V1 Page 1 of 4
Order Number:
Date Received: Aug 07, 2009
Date Sampled: Aug 6, 2009
Date Reported: Aug 14, 2009
Contact: Chris Gunton

Methods

- USEPA 6010B Heavy Metals & USEPA 7470/71 Mercury
- Method 102 - ANZECC - % Moisture

Comments

Notes

Authorised

Report Number: 249970-A-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Onur Mehmet
Client Manager
NATA Signatory

Tammy Lakeland
Chief Inorganic Chemist

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 20-110%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-110%

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 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

Melbourne
3-5 Kingston Town Close
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NATA Site # 1254

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NATA Site # 18217

Adelaide
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Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC11A**	**QC12A**
2/54 Northbourne Avenue	**Lab Number**		**M09-AU02410**	**M09-AU02411**
Canberra	**Matrix**		**Soil**	**Soil**
ACT 2609	**Sample Date**		**Aug 6, 2009**	**Aug 6, 2009**
Analysis Type	**LOR**	**Units**		
% Moisture	0.1	%	13	8.6
Heavy Metals				
Arsenic	2.0	mg/kg	7.2	9.4
Cadmium	0.5	mg/kg	< 0.5	< 0.5
Chromium	5	mg/kg	21	20
Copper	5	mg/kg	11	13
Lead	5	mg/kg	55	460
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	14	13
Zinc	5	mg/kg	130	440

COMMENTS:

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Coffey Environments Pty Ltd ACT 2/54 Northbourne Avenue Canberra ACT 2609	Client Sample ID	QC11A	QC11A	RPD	SPIKE	LCS	Method blank
	Lab Number	**09-AU02410**	**09-AU02410**	**09-AU02410**	**09-AU02410**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**	**Aug 6, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		7.2	7.7	6.9	95	101	< 2
Cadmium		< 0.5	< 0.5	< 1	93	95	< 0.5
Chromium		21	21	2.3	89	83	< 5
Copper		11	9.8	8.8	108	101	< 5
Lead		55	59	6.5	79	92	< 5
Mercury		< 0.1	< 0.1	< 1	78	87	< 0.1
Nickel		14	15	3.8	86	92	< 5
Zinc		130	140	12	95	81	< 5

COMMENTS:

coffey

Chain of Custody

No: 26380

Laboratory Quotation / Order No:

Job No: EC00233AA Sheet 1 of 1

Dispatch to: (Address & Phone No.) MCT	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 10/8/09
Attention: Sample Receipts	Project Manager: (report results to) Chris Canton	Courier Service: TNT Consignment Note No: 309 609 281.

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	10/8/09	1:30pm	JAMES 250114 mg4	11/8	9-30am

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals: 8	OCP/OPP	Sample Condition on Receipt
	Soil	250ml Jar	QC13A	7/8/09				X		
	↓	↓	QC14A	↓				X	X	

Analyses Required

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

JOB NUMBER **MUST BE** REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey **BLUE:** To be returned with results

mgt Environmental

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CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra
ACT 2609
Site: EC00233AA

Report Number: 250114-A-V1 Page 1 of 8
Order Number:
Date Received: Aug 11, 2009
Date Sampled: Aug 7, 2009
Date Reported: Aug 19, 2009
Contact: Chris Gunton

Methods

- USEPA 8141A Organophosphorus Pesticides
- USEPA 8081A Organochlorine Pesticides
- USEPA 6010B Heavy Metals & USEPA 7470/71 Mercury
- Method 102 - ANZECC - % Moisture

Comments

Notes

Authorised

Report Number: 250114-A-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Onur Mehmet
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Tammy Lakeland
Chief Inorganic Chemist

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UNITS

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REPORT SPECIFIC NOTES

Company name:	Coffey Environments Pty Ltd ACT	**Order No:**		**Received:**	Aug 11, 2009 12:00
Address:	2/54 Northbourne Avenue	**Report #:**	250114	**Due:**	Aug 18, 2009 12:09
	Canberra ACT 2609	**Phone:**	02 6248 7154	**Priority:**	Normal
		Fax:	02 6248 7157	**Contact name:**	Chris Gunton
Client Job No:	EC00233AA				

mgt Client Manager: Onur Mehmet

Sample Details						% Moisture	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Organochlorine Pesticides	Organophosphorous Pesticides
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site #1254						X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site #18217																
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	**Comment**											
QC13A	Aug 07, 2009		Soil	M09-AU03629		X	X	X	X	X	X	X	X	X		
QC14A	Aug 07, 2009		Soil	M09-AU03630		X	X	X	X	X	X	X	X	X	X	X

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Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC13A**	**QC14A**
2/54 Northbourne Avenue	**Lab Number**		**M09-AU03629**	**M09-AU03630**
Canberra	**Matrix**		**Soil**	**Soil**
ACT 2609	**Sample Date**		**Aug 7, 2009**	**Aug 7, 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	%	-	104
Tetrachloro-m-xylene (surr.)	1	%	-	83
Organophosphorous Pesticides				
Bolstar	0.2	mg/kg	-	< 0.2
Chlorpyrifos	0.2	mg/kg	-	< 0.2
Demeton-O	0.2	mg/kg	-	< 0.2
Diazinon	0.2	mg/kg	-	< 0.2
Dichlorvos	0.2	mg/kg	-	< 0.2
Disulfoton	0.2	mg/kg	-	< 0.2

COMMENTS:

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Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC13A**	**QC14A**
2/54 Northbourne Avenue	**Lab Number**		**M09-AU03629**	**M09-AU03630**
Canberra	**Matrix**		**Soil**	**Soil**
ACT 2609	**Sample Date**		**Aug 7, 2009**	**Aug 7, 2009**
Analysis Type	**LOR**	**Units**		
Ethion	0.2	mg/kg	-	< 0.2
Ethoprop	0.2	mg/kg	-	< 0.2
Fenitrothion	0.2	mg/kg	-	< 0.2
Fensulfothion	0.2	mg/kg	-	< 0.2
Fenthion	0.2	mg/kg	-	< 0.2
Merphos	0.2	mg/kg	-	< 0.5
Methyl azinphos	0.2	mg/kg	-	< 0.2
Methyl parathion	0.2	mg/kg	-	< 0.2
Mevinphos	0.2	mg/kg	-	< 0.2
Naled	0.2	mg/kg	-	< 1
Phorate	0.2	mg/kg	-	< 0.2
Ronnel	0.2	mg/kg	-	< 0.2
Tokuthion	0.2	mg/kg	-	< 0.2
Trichloronate	0.2	mg/kg	-	< 0.2
Triphenylphosphate (surr.)	1	%	-	75
% Moisture	0.1	%	11	2.7
Heavy Metals				
Arsenic	2.0	mg/kg	51	11
Cadmium	0.5	mg/kg	2.2	< 0.5
Chromium	5	mg/kg	24	17
Copper	5	mg/kg	450	9.8
Lead	5	mg/kg	27000	12
Mercury	0.1	mg/kg	8.0	< 0.1
Nickel	5	mg/kg	12	18
Zinc	5	mg/kg	4400	37

COMMENTS:

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

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Coffey Environments Pty Ltd ACT	**Client Sample ID**	**QC13A**	**QC13A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
2/54 Northbourne Avenue	**Lab Number**	**09-AU03629**	**09-AU03629**	**09-AU03629**	**09-AU03629**	**Batch**	**Batch**
Canberra	**QA Description**		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
ACT 2609	**Matrix**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDD		< 0.05	< 0.05	< 1	124	88	< 0.05
4.4'-DDE		< 0.05	< 0.05	< 1	121	82	< 0.05
4.4'-DDT		< 0.05	< 0.05	< 1	72	91	< 0.05
a-BHC		< 0.05	< 0.05	< 1	126	83	< 0.05
Aldrin		< 0.05	< 0.05	< 1	130	79	< 0.05
b-BHC		< 0.05	< 0.05	< 1	126	91	< 0.05
Chlordane		< 0.1	< 0.1	< 1	-	-	< 0.1
d-BHC		< 0.05	< 0.05	< 1	129	87	< 0.05
Dieldrin		< 0.05	< 0.05	< 1	126	80	< 0.05
Endosulfan I		< 0.05	< 0.05	< 1	129	80	< 0.05
Endosulfan II		< 0.05	< 0.05	< 1	126	81	< 0.05
Endosulfan sulphate		< 0.05	< 0.05	< 1	123	94	< 0.05
Endrin		< 0.05	< 0.05	< 1	103	84	< 0.05
Endrin aldehyde		< 0.05	< 0.05	< 1	120	85	< 0.05
Endrin ketone		< 0.05	< 0.05	< 1	129	91	< 0.05
g-BHC (Lindane)		< 0.05	< 0.05	< 1	127	85	< 0.05
Heptachlor		< 0.05	< 0.05	< 1	116	84	< 0.05
Heptachlor epoxide		< 0.05	< 0.05	< 1	128	81	< 0.05
Hexachlorobenzene		< 0.05	< 0.05	< 1	128	88	< 0.05
Methoxychlor		< 0.05	< 0.05	< 1	73	98	< 0.05
Toxophene		< 0.1	< 0.1	< 1	-	-	< 0.1
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		2.7	2.4	9.9	88	96	< 2
Cadmium		< 0.5	< 0.5	< 1	101	102	< 0.5
Chromium		32	39	19	106	107	< 5
Copper		17	21	16	121	105	< 5
Lead		24	24	< 1	82	95	< 5
Mercury		< 0.1	< 0.1	< 1	73	92	< 0.1

COMMENTS:

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra
ACT 2609

	Client Sample	**QC13A**	**QC13A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**09-AU03629**	**09-AU03629**	**09-AU03629**	**09-AU03629**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Heavy Metals		Batch	Batch	Batch	Batch		
Nickel		28	30	8.4	103	101	< 5
Zinc		740	650	13	126	96	< 5

COMMENTS:

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Coffey Environments Pty Ltd ACT	**Client Sample ID**	**QC14A**	**QC14A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
2/54 Northbourne Avenue	**Lab Number**	**09-AU03630**	**09-AU03630**	**09-AU03630**	**09-AU03630**	**Batch**	**Batch**
Canberra	**QA Description**		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
ACT 2609	**Matrix**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**	**Aug 7, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Organophosphorous Pesticides		Batch	Batch	Batch	Batch		
Bolstar		< 0.2	< 0.2	< 1	-	-	< 0.2
Chlorpyrifos		< 0.2	< 0.2	< 1	-	-	< 0.2
Demeton-O		< 0.2	< 0.2	< 1	-	-	< 0.2
Diazinon		< 0.2	< 0.2	< 1	77	72	< 0.2
Dichlorvos		< 0.2	< 0.2	< 1	-	-	< 0.2
Disulfoton		< 0.2	< 0.2	< 1	-	-	< 0.2
Ethion		< 0.2	< 0.2	< 1	82	78	< 0.2
Ethoprop		< 0.2	< 0.2	< 1	-	-	< 0.2
Fenitrothion		< 0.2	< 0.2	< 1	82	72	< 0.2
Fensulfothion		< 0.2	< 0.2	< 1	-	-	< 0.2
Fenthion		< 0.2	< 0.2	< 1	-	-	< 0.2
Merphos		< 0.5	< 0.5	< 1	-	-	< 0.2
Methyl azinphos		< 0.2	< 0.2	< 1	-	-	< 0.2
Methyl parathion		< 0.2	< 0.2	< 1	109	106	< 0.2
Mevinphos		< 0.2	< 0.2	< 1	93	122	< 0.2
Naled		< 1	< 1	< 1	-	-	< 0.2
Phorate		< 0.2	< 0.2	< 1	-	-	< 0.2
Ronnel		< 0.2	< 0.2	< 1	-	-	< 0.2
Tokuthion		< 0.2	< 0.2	< 1	-	-	< 0.2
Trichloronate		< 0.2	< 0.2	< 1	-	-	< 0.2

COMMENTS:

coffey

Chain of Custody

No: 26383

Laboratory Quotation / Order No:

Job No: ECO0233AA Sheet 1 of 1

Dispatch to: (Address & Phone No.) MCT	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 13/8/09
Attention: Sample Receipts	Project Manager: (report results to) ~~Chris Gunton~~ Julian Howard	Courier Service: TNT Consignment Note No: 309 604 303

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Charlie Lucas	13/8/09	3:00pm	Robyn J mgt Rep: 250262	14/8	9:10am.

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MAHs = BTEX	Metals:	OCP/OPP	Sulphate	Sample Condition on Receipt
	Water	1 Amber, 1 Metals 2 Vials	QC16A	13/8/09				X	X	X	

Analyses Required

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection Turnaround Required: Standard

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

64220/9-06

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
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Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra
ACT 2609
Site: EC00233AA

Report Number: 250262-B-V1 Page 1 of 7
Order Number:
Date Received: Aug 14, 2009
Date Sampled: Aug 13, 2009
Date Reported: Aug 21, 2009
Contact: Julian Howard

Methods

- USEPA 8141A Organophosphorus Pesticides
- USEPA 8081A Organochlorine Pesticides
- USEPA 6020 Heavy Metals & USEPA 7470/71 Mercury
- APHA 4500-SO4 (SO4 by Discrete Analyser)

Comments

Notes

Authorised

Report Number: 250262-B-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Onur Mehmet
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Tammy Lakeland
Chief Inorganic Chemist

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 20-110%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 20-110%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-110%

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 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

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company name:	Coffey Environments Pty Ltd ACT	**Order No:**		**Received:**	Aug 14, 2009 12:00
Address:	2/54 Northbourne Avenue	**Report #:**	250262	**Due:**	Aug 21, 2009 12:01
	Canberra ACT 2609	**Phone:**	02 6248 7154	**Priority:**	Normal
		Fax:	02 6248 7157	**Contact name:**	Julian Howard
Client Job No:	EC00233AA				

mgt Client Manager: Onur Mehmet

Sample Details						Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Sulphate (S)	Zinc	Organochlorine Pesticides	Organophosphorous Pesticides
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site #1254						X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site #18217																
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	**Comment**											
QC16A	Aug 13, 2009		Water	M09-AU04674	LOWEST LEVEL DETECTION.	X	X	X	X	X	X	X	X	X	X	X

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC16A**
2/54 Northbourne Avenue	**Lab Number**		**M09-AU04674**
Canberra	**Matrix**		**Water**
ACT 2609	**Sample Date**		**Aug 13, 2009**
Analysis Type	**LOR**	**Units**	
Organochlorine Pesticides			
4.4'-DDD	0.0001	mg/L	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001
Chlordane	0.0005	mg/L	< 0.0005
d-BHC	0.0001	mg/L	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001
Endrin	0.0001	mg/L	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001
Toxophene	0.0005	mg/L	< 0.0005
Dibutylchlorendate (surr.)	1	%	143
Tetrachloro-m-xylene (surr.)	1	%	99
Organophosphorous Pesticides			
Bolstar	0.002	mg/L	< 0.002
Chlorpyrifos	0.002	mg/L	< 0.002
Demeton-O	0.002	mg/L	< 0.002
Diazinon	0.002	mg/L	< 0.002
Dichlorvos	0.002	mg/L	< 0.002
Disulfoton	0.002	mg/L	< 0.002

COMMENTS:

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC16A**
2/54 Northbourne Avenue	**Lab Number**		**M09-AU04674**
Canberra	**Matrix**		**Water**
ACT 2609	**Sample Date**		**Aug 13, 2009**
Analysis Type	**LOR**	**Units**	
Ethion	0.002	mg/L	< 0.002
Ethoprop	0.002	mg/L	< 0.002
Fenitrothion	0.002	mg/L	< 0.002
Fensulfothion	0.002	mg/L	< 0.005
Fenthion	0.002	mg/L	< 0.002
Merphos	0.002	mg/L	< 0.002
Methyl azinphos	0.002	mg/L	< 0.002
Methyl parathion	0.002	mg/L	< 0.002
Mevinphos	0.002	mg/L	< 0.002
Naled	0.002	mg/L	< 0.002
Phorate	0.002	mg/L	< 0.002
Ronnel	0.002	mg/L	< 0.002
Tokuthion	0.002	mg/L	< 0.002
Trichloronate	0.002	mg/L	< 0.002
Triphenylphosphate (surr.)	1	%	82
Sulphate (S)	5	mg/L	5.5
Heavy Metals			
Arsenic	0.001	mg/L	< 0.001
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Zinc	0.001	mg/L	0.003

COMMENTS:

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Coffey Environments Pty Ltd ACT	**Client Sample ID**	**QC16A**	**QC16A**	**RPD**	**SPIKE**	**LCS**	**Method blank**
2/54 Northbourne Avenue	**Lab Number**	**09-AU04674**	**09-AU04674**	**09-AU04674**	**09-AU04674**	**Batch**	**Batch**
Canberra	**QA Description**		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
ACT 2609	**Matrix**	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**
	Sample Date	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Sulphate (S)		< 5	< 5	< 1	94	98	< 5
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDD		< 0.0001	< 0.0001	< 1	104	78	< 0.0001
4.4'-DDE		< 0.0001	< 0.0001	< 1	110	88	< 0.0001
4.4'-DDT		< 0.0001	< 0.0001	< 1	75	95	< 0.0001
a-BHC		< 0.0001	< 0.0001	< 1	92	76	< 0.0001
Aldrin		< 0.0001	< 0.0001	< 1	79	80	< 0.0001
b-BHC		< 0.0001	< 0.0001	< 1	94	75	< 0.0001
Chlordane		< 0.001	< 0.001	< 1	-	-	< 0.0005
d-BHC		< 0.0001	< 0.0001	< 1	101	100	< 0.0001
Dieldrin		< 0.0001	< 0.0001	< 1	118	85	< 0.0001
Endosulfan I		< 0.0001	< 0.0001	< 1	115	83	< 0.0001
Endosulfan II		< 0.0001	< 0.0001	< 1	116	83	< 0.0001
Endosulfan sulphate		< 0.0001	< 0.0001	< 1	119	90	< 0.0001
Endrin		< 0.0001	< 0.0001	< 1	116	83	< 0.0001
Endrin aldehyde		< 0.0001	< 0.0001	< 1	104	83	< 0.0001
Endrin ketone		< 0.0001	< 0.0001	< 1	109	95	< 0.0001
g-BHC (Lindane)		< 0.0001	< 0.0001	< 1	98	88	< 0.0001
Heptachlor		< 0.0001	< 0.0001	< 1	91	90	< 0.0001
Heptachlor epoxide		< 0.0001	< 0.0001	< 1	114	80	< 0.0001
Hexachlorobenzene		< 0.0001	< 0.0001	< 1	79	75	< 0.0001
Methoxychlor		< 0.0001	< 0.0001	< 1	107	95	< 0.0001
Toxophene		< 0.001	< 0.001	< 1	-	-	< 0.0005
Organophosphorous Pesticides		Batch	Batch	Batch	Batch		
Bolstar		< 0.002	< 0.002	< 1	-	-	< 0.002
Chlorpyrifos		< 0.002	< 0.002	< 1	-	-	< 0.002
Demeton-O		< 0.002	< 0.002	< 1	-	-	< 0.002
Diazinon		< 0.002	< 0.002	< 1	92	81	< 0.002
Dichlorvos		< 0.002	< 0.002	< 1	-	-	< 0.002

COMMENTS:

Coffey Environments Pty Ltd ACT
2/54 Northbourne Avenue
Canberra

ACT 2609

	Client Sample	QC16A	QC16A	RPD	SPIKE	LCS	Method blank
	Lab Number	**09-AU04674**	**09-AU04674**	**09-AU04674**	**09-AU04674**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Water**	**Water**	**Water**	**Water**	**Water**	**Water**
	Sample Date	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**	**Aug 13, 2009**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Organophosphorous Pesticides		Batch	Batch	Batch	Batch		
Disulfoton		< 0.002	< 0.002	< 1	-	-	< 0.002
Ethion		< 0.002	< 0.002	< 1	88	84	< 0.002
Ethoprop		< 0.002	< 0.002	< 1	-	-	< 0.002
Fenitrothion		< 0.002	< 0.002	< 1	74	90	< 0.002
Fensulfothion		< 0.002	< 0.002	< 1	-	-	< 0.002
Fenthion		< 0.002	< 0.002	< 1	-	-	< 0.002
Merphos		< 0.002	< 0.002	< 1	-	-	< 0.002
Methyl azinphos		< 0.002	< 0.002	< 1	-	-	< 0.002
Methyl parathion		< 0.002	< 0.002	< 1	98	120	< 0.002
Mevinphos		< 0.002	< 0.002	< 1	118	85	< 0.002
Naled		< 0.002	< 0.002	< 1	-	-	< 0.002
Phorate		< 0.002	< 0.002	< 1	-	-	< 0.002
Ronnel		< 0.002	< 0.002	< 1	-	-	< 0.002
Tokuthion		< 0.002	< 0.002	< 1	-	-	< 0.002
Trichloronate		< 0.002	< 0.002	< 1	-	-	< 0.002
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		0.001	0.002	4.7	100	96	< 0.001
Cadmium		< 0.0002	< 0.0002	< 1	102	90	< 0.0002
Chromium		0.004	0.004	< 1	99	93	< 0.001
Copper		< 0.001	< 0.001	5.9	96	91	< 0.001
Lead		< 0.001	< 0.001	< 1	98	91	< 0.001
Mercury		< 0.0001	< 0.0001	< 1	94	104	< 0.0001
Nickel		< 0.001	< 0.001	11	97	97	< 0.001
Zinc		0.008	0.008	1.1	95	93	< 0.001

COMMENTS:

coffey

Chain of Custody

TNT. 309609483

Laboratory Quotation / Order No:

No: 26309

Job No: EC00233AA Sheet 1 of 1

Dispatch to: (Address & Phone No.) MGT	Sampled by: Charlie Lucas	Consigning Officer: Canberra Date Dispatched: 25/11/09
Attention: Sample Receipts	Project Manager: (report results to) Julian Howard	Courier Service: TNT Consignment Note No: 309609483

Relinquished by: Charlie	Date:	Time:	Received by: MGT – John	Date:	Time:
	25/11/09	4.00pm		26/11/09	9:30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals: 8												Sample Condition on Receipt
	Soil	250ml Jar	QC100A	25/11/09				X												
	↓	↓	QC101A	↓																

Special Laboratory Instructions:

Detection Limits: Lowest Level Detection

Turnaround Required: Standard

MGT Report # 255840

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

64220/9-06

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

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Marleston SA 5033
Phone : 08 8443 4430

CERTIFICATE OF ANALYSIS

Coffey Environments Pty Ltd ACT
17 Torrens St
Braddon
ACT 2612
Site: EC00233AA

Report Number: 255840-A-V1 Page 1 of 5
Order Number:
Date Received: Nov 26, 2009
Date Sampled: Nov 25, 2009
Date Reported: Dec 3, 2009
Contact: Julian Howard

Methods

- USEPA 6010B Heavy Metals & USEPA 7470/71 Mercury
- Method 102 - ANZECC - % Moisture

Comments

Notes

Authorised

Report Number: 255840-A-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Onur Mehmet
Client Manager
NATA Signatory

Andrew Cook
Chief Inorganic Chemist

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Phone : 08 8443 4430

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

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LOR	Limit of Reporting.
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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 30-130%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-130%

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

mgt Environmental
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140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company Name: Coffey Environments Pty Ltd ACT
Address: 17 Torrens St
Braddon
ACT 2612

Client Job No.: EC00233AA

Order No.:
Report #: 255840
Phone: 02 6248 7154
Fax: 02 6248 7157

Received: Nov 26, 2009 12:00
Due: Dec 3, 2009 11:57
Priority: 5 Day
Contact name: Julian Howard

mgt Client Manager: Onur Mehmet

Sample Detail					% Moisture	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
Laboratory where analysis is conducted													
Melbourne Laboratory - NATA Site #1254					X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site #18217													
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
QC100A	Nov 25, 2009		Soil	M09-No08194	X	X	X	X	X	X	X	X	X

Coffey Environments Pty Ltd ACT	**Client Sample ID**		**QC100A**
17 Torrens St	**Lab Number**		**M09-No08194**
Braddon	**Matrix**		**Soil**
ACT 2612	**Sample Date**		**Nov 25, 2009**
Analysis Type	**LOR**	**Units**	
% Moisture	0.1	%	2.1
Heavy Metals			
Arsenic	2.0	mg/kg	40
Cadmium	0.5	mg/kg	< 0.5
Chromium	5	mg/kg	19
Copper	5	mg/kg	23
Lead	5	mg/kg	100
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	14
Zinc	5	mg/kg	120

COMMENTS:

Coffey Environments Pty Ltd ACT 17 Torrens St Braddon ACT 2612	Client Sample ID	QC100A	QC100A	RPD	SPIKE	LCS	Method blank
	Lab Number	09-No08194	09-No08194	09-No08194	09-No08194	Batch	Batch
	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	Nov 25, 2009	Nov 25, 2009	Nov 25, 2009	Nov 25, 2009	Nov 25, 2009	Nov 25, 2009
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/kg
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		45	39	14	88	100	< 2
Cadmium		< 0.5	< 0.5	< 1	92	103	< 0.5
Chromium		15	15	2.2	86	106	< 5
Copper		16	24	40	91	93	< 5
Lead		41	31	27	87	101	< 5
Mercury		< 0.1	< 0.1	< 1	72	100	< 0.1
Nickel		6.5	6.5	< 1	89	100	< 5
Zinc		33	28	16	93	104	< 5

COMMENTS:

ANALYTICAL REPORT

18 August 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Chris Gunton**

Your Reference: EC00233AA

Our Reference: SE71274

Samples: 28 Soils, 5 Waters
Received: 11/8/09

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 Salarmis
Inorganics Signatory

Ly Kim Ha
Organics Signatory

Huong Crawford
Metals Signatory

OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-15 DC1 Soil 7/08/2009	SE71274-16 DC2 Soil 7/08/2009	SE71274-17 DC5 Soil 7/08/2009	SE71274-18 DC6 Soil 7/08/2009	SE71274-19 DC7 Soil 7/08/2009
Date Extracted		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
Date Analysed		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
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	110	119	101	102

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OC Pesticides in Soil Our Reference:	UNITS	SE71274-20	SE71274-21	SE71274-22	SE71274-24	SE71274-27
Your Reference	-------------	DC8	DC9	DC10	QC14	DC13
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		7/08/2009	7/08/2009	7/08/2009	7/08/2009	10/08/2009
Depth						
Date Extracted		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
Date Analysed		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
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*	%	108	104	105	101	94

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OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-2 8 DC12 Soil 10/08/2009	SE71274-3 0 DC3 Soil 10/08/2009	SE71274-3 1 DC4 Soil 10/08/2009
Date Extracted		14/08/2009	14/08/2009	14/08/2009
Date Analysed		14/08/2009	14/08/2009	14/08/2009
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*	%	106	103	104

OP Pesticides in Soil by GCMS						
Our Reference:	UNITS	SE71274-15	SE71274-16	SE71274-17	SE71274-18	SE71274-19
Your Reference	-------------	DC1	DC2	DC5	DC6	DC7
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009
Depth						
Date Extracted		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
Date Analysed		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
Dichlorvos	mg/kg	<1	<1	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	108	120	116	104	104
d14-p-Terphenyl (Surr)	%	120	120	112	108	104

OP Pesticides in Soil by GCMS Our Reference:	UNITS	SE71274-20	SE71274-21	SE71274-22	SE71274-24	SE71274-27
Your Reference	-------------	DC8	DC9	DC10	QC14	DC13
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		7/08/2009	7/08/2009	7/08/2009	7/08/2009	10/08/2009
Depth						
Date Extracted		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
Date Analysed		14/08/2009	14/08/2009	14/08/2009	14/08/2009	14/08/2009
Dichlorvos	mg/kg	<1	<1	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	108	112	112	104	112
d14-p-Terphenyl (Surr)	%	112	104	112	112	108

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OP Pesticides in Soil by GCMS Our Reference:	UNITS	SE71274-28	SE71274-30	SE71274-31
Your Reference	-------------	DC12	DC3	DC4
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		10/08/2009	10/08/2009	10/08/2009
Depth				
Date Extracted		14/08/2009	14/08/2009	14/08/2009
Date Analysed		14/08/2009	14/08/2009	14/08/2009
Dichlorvos	mg/kg	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	108	104	116
d14-p-Terphenyl (Surr)	%	108	104	116

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Inorganics Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-2 MS4-30_0.0-0.2 Soil 7/08/2009	SE71274-8 MS4-34_0.0-0.2 Soil 7/08/2009	SE71274-25 WB7 Water 7/08/2009
Date Extracted- (pH 1:5 soil: Water)		13/08/2009	13/08/2009	[NA]
Date Analysed (pH 1:5 Soil: Water)		13/08/2009	13/08/2009	[NA]
pH 1:5 soil:water 1:5 soil:water	pH Units	6.4	6.6	[NA]
Date Extracted (pH)		[NA]	[NA]	13/08/2009
Date Analysed (pH)		[NA]	[NA]	13/08/2009
pH	pH Units	[NA]	[NA]	6.2

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-1 MS4-29_0. 0-0.2 Soil 7/08/2009	SE71274-2 MS4-30_0. 0-0.2 Soil 7/08/2009	SE71274-3 MS4-30_0. 5-0.6 Soil 7/08/2009	SE71274-4 MS4-31_0. 0-0.2 Soil 7/08/2009	SE71274-5 MS4-32_0. 0-0.2 Soil 7/08/2009
Date Extracted (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Arsenic	mg/kg	9	9	7	8	6
Cadmium	mg/kg	0.6	0.6	0.5	0.5	0.3
Chromium	mg/kg	19	19	22	20	14
Copper	mg/kg	13	12	8.9	12	16
Lead	mg/kg	120	130	94	110	110
Nickel	mg/kg	12	12	13	13	12
Zinc	mg/kg	280	230	190	200	110

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-6 MS4-33_0. 0-0.2 Soil 7/08/2009	SE71274-7 MS4-33_0. 5-0.6 Soil 7/08/2009	SE71274-8 MS4-34_0. 0-0.2 Soil 7/08/2009	SE71274-9 MS4-34_0. 5-0.6 Soil 7/08/2009	SE71274-1 0 MS4-35_0. 0-0.2 Soil 7/08/2009
Date Extracted (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Arsenic	mg/kg	4	6	5	5	7
Cadmium	mg/kg	0.4	0.3	0.5	0.3	0.3
Chromium	mg/kg	16	16	18	16	15
Copper	mg/kg	9.0	11	10	9.6	15
Lead	mg/kg	86	190	86	130	110
Nickel	mg/kg	12	12	13	10	13
Zinc	mg/kg	130	120	140	120	130

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-11 MS4-36_0.0-0.2 Soil 7/08/2009	SE71274-12 MS4-37_0.0-0.2 Soil 7/08/2009	SE71274-13 MS4-38_0.0-0.2 Soil 7/08/2009	SE71274-14 MS4-39_0.0-0.2 Soil 7/08/2009	SE71274-15 DC1 Soil 7/08/2009
Date Extracted (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Arsenic	mg/kg	6	44	51	46	9
Cadmium	mg/kg	<0.3	2.7	2.4	2.3	<0.3
Chromium	mg/kg	14	17	16	18	23
Copper	mg/kg	11	350	340	340	17
Lead	mg/kg	26	33,000	25,000	23,000	26
Nickel	mg/kg	18	8.7	7.4	8.6	18
Zinc	mg/kg	51	2,400	2,200	2,200	56

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-16 DC2 Soil 7/08/2009	SE71274-17 DC5 Soil 7/08/2009	SE71274-18 DC6 Soil 7/08/2009	SE71274-19 DC7 Soil 7/08/2009	SE71274-20 DC8 Soil 7/08/2009
Date Extracted (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Arsenic	mg/kg	4	3	5	5	6
Cadmium	mg/kg	0.4	0.3	0.3	0.3	<0.3
Chromium	mg/kg	14	15	16	19	17
Copper	mg/kg	15	15	11	8.9	8.1
Lead	mg/kg	130	13	9.4	13	11
Nickel	mg/kg	15	13	17	18	17
Zinc	mg/kg	210	61	68	76	46

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-21 DC9 Soil 7/08/2009	SE71274-22 DC10 Soil 7/08/2009	SE71274-23 QC13 Soil 7/08/2009	SE71274-24 QC14 Soil 7/08/2009	SE71274-27 DC13 Soil 10/08/2009
Date Extracted (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Metals)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Arsenic	mg/kg	8	5	49	6	33
Cadmium	mg/kg	0.4	0.3	2.4	<0.3	0.7
Chromium	mg/kg	20	16	18	20	19
Copper	mg/kg	18	10	330	10	24
Lead	mg/kg	12	12	22,000	13	94
Nickel	mg/kg	19	18	8.6	17	26
Zinc	mg/kg	67	61	2,300	49	180

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-28 DC12 Soil 10/08/2009	SE71274-30 DC3 Soil 10/08/2009	SE71274-31 DC4 Soil 10/08/2009
Date Extracted (Metals)		13/08/2009	13/08/2009	13/08/2009
Date Analysed (Metals)		13/08/2009	13/08/2009	13/08/2009
Arsenic	mg/kg	<3	5	5
Cadmium	mg/kg	<0.3	<0.3	<0.3
Chromium	mg/kg	12	20	17
Copper	mg/kg	6.9	17	7.8
Lead	mg/kg	9	12	9.0
Nickel	mg/kg	9.1	23	18
Zinc	mg/kg	18	52	36

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71274-1	SE71274-2	SE71274-3	SE71274-4	SE71274-5
Your Reference	-------------	MS4-29_0.0-0.2	MS4-30_0.0-0.2	MS4-30_0.5-0.6	MS4-31_0.0-0.2	MS4-32_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009
Date Extracted (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71274-6	SE71274-7	SE71274-8	SE71274-9	SE71274-10
Your Reference	-------------	MS4-33_0.0-0.2	MS4-33_0.5-0.6	MS4-34_0.0-0.2	MS4-34_0.5-0.6	MS4-35_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009
Date Extracted (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71274-11	SE71274-12	SE71274-13	SE71274-14	SE71274-15
Your Reference	-------------	MS4-36_0.0-0.2	MS4-37_0.0-0.2	MS4-38_0.0-0.2	MS4-39_0.0-0.2	DC1
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009
Date Extracted (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Mercury	mg/kg	<0.05	3.2	2.2	2.5	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71274-16	SE71274-17	SE71274-18	SE71274-19	SE71274-20
Your Reference	-------------	DC2	DC5	DC6	DC7	DC8
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009
Depth						
Date Extracted (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71274-21	SE71274-22	SE71274-23	SE71274-24	SE71274-27
Your Reference	-------------	DC9	DC10	QC13	QC14	DC13
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		7/08/2009	7/08/2009	7/08/2009	7/08/2009	10/08/2009
Depth						
Date Extracted (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Date Analysed (Mercury)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Mercury	mg/kg	<0.05	<0.05	2.6	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71274-28	SE71274-30	SE71274-31
Your Reference	-------------	DC12	DC3	DC4
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		10/08/2009	10/08/2009	10/08/2009
Depth				
Date Extracted (Mercury)		13/08/2009	13/08/2009	13/08/2009
Date Analysed (Mercury)		13/08/2009	13/08/2009	13/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05

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BTEX in Water (µg/L) Our Reference:	UNITS	SE71274-26	SE71274-32	SE71274-33
Your Reference	-------------	TB9	TB10	TS5
Sample Matrix	------------	Water	Water	Water
Date Sampled		7/08/2009	10/08/2009	10/08/2009
Depth				
Date Extracted (BTEX)		15/08/2009	15/08/2009	15/08/2009
Date Analysed (BTEX)		15/08/2009	15/08/2009	15/08/2009
Benzene	µg/L	<0.5	<0.5	210
Toluene	µg/L	<0.5	<0.5	220
Ethylbenzene	µg/L	<0.5	<0.5	200
Total Xylenes	µg/L	<1.5	<1.5	230
Surrogate	%	64	71	72

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OC Pesticides in Water		
Our Reference:	UNITS	SE71274-3 4
Your Reference	-------------	WB8
Sample Matrix	------------	Water
Date Sampled		10/08/2009
Depth		
Date Extracted		17/08/2009
Date Analysed		17/08/2009
HCB	µg/L	<0.2
alpha-BHC	µg/L	<0.2
gamma-BHC(lindane)	µg/L	<0.2
Heptachlor	µg/L	<0.2
Aldrin	µg/L	<0.2
beta-BHC	µg/L	<0.2
delta-BHC	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
o,p-DDE	µg/L	<0.2
alpha-Endosulfan	µg/L	<0.2
trans-Chlordane	µg/L	<0.2
cis-Chlordane	µg/L	<0.2
trans-Nonachlor	µg/L	<0.2
p,p-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
o,p-DDD	µg/L	<0.2
o,p-DDT	µg/L	<0.2
beta-Endosulfan	µg/L	<0.2
p,p-DDD	µg/L	<0.2
p,p-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Endrin Ketone	µg/L	<0.2
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	82

OP Pesticides in Water by GCMS Our Reference: Your Reference Sample Matrix Date Sampled Depth	 UNITS ------------- ------------	 SE71274-3 4 WB8 Water 10/08/2009
Date Extracted		14/08//09
Date Analysed		14/08/2009
Dichlorvos	µg/L	<1
Dimethoate	µg/L	<1
Diazinon	µg/L	<0.5
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.20
Chlorpyrifos-ethyl	µg/L	<0.2
Parathion-ethyl	µg/L	<0.2
Bromofos-ethyl	µg/L	<0.2
Methidathion	µg/L	<0.5
Ethion	µg/L	<0.2
Azinphos-methyl	µg/L	<0.20
2-fluorobiphenyl (Surr)	%	110
d14-p-Terphenyl (Surr)	%	113

Trace HM (ICP-MS)-Dissolved Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-25 WB7 Water 7/08/2009	SE71274-34 WB8 Water 10/08/2009
Date Extracted (Metals-ICPMS)		12/08/2009	12/08/2009
Date Analysed (Metals-ICPMS)		12/08/2009	12/08/2009
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	4	3

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Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71274-25	SE71274-34
Your Reference	-------------	WB7	WB8
Sample Matrix	------------	Water	Water
Date Sampled		7/08/2009	10/08/2009
Depth			
Date Extracted (Mercury)		14/08/09A	14/08/09A
Date Analysed (Mercury)		14/08/2009	14/08/2009
Mercury at MDL - Dissolved	mg/L	<0.0001	<0.0001

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-1 MS4-29_0. 0-0.2 Soil 7/08/2009	SE71274-2 MS4-30_0. 0-0.2 Soil 7/08/2009	SE71274-3 MS4-30_0. 5-0.6 Soil 7/08/2009	SE71274-4 MS4-31_0. 0-0.2 Soil 7/08/2009	SE71274-5 MS4-32_0. 0-0.2 Soil 7/08/2009
Date Analysed (moisture)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Moisture	%	14	14	12	13	8

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-6 MS4-33_0. 0-0.2 Soil 7/08/2009	SE71274-7 MS4-33_0. 5-0.6 Soil 7/08/2009	SE71274-8 MS4-34_0. 0-0.2 Soil 7/08/2009	SE71274-9 MS4-34_0. 5-0.6 Soil 7/08/2009	SE71274-1 0 MS4-35_0. 0-0.2 Soil 7/08/2009
Date Analysed (moisture)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Moisture	%	11	10	13	9	8

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-1 1 MS4-36_0. 0-0.2 Soil 7/08/2009	SE71274-1 2 MS4-37_0. 0-0.2 Soil 7/08/2009	SE71274-1 3 MS4-38_0. 0-0.2 Soil 7/08/2009	SE71274-1 4 MS4-39_0. 0-0.2 Soil 7/08/2009	SE71274-1 5 DC1 Soil 7/08/2009
Date Analysed (moisture)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Moisture	%	7	7	7	9	6

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71274-1 6 DC2 Soil 7/08/2009	SE71274-1 7 DC5 Soil 7/08/2009	SE71274-1 8 DC6 Soil 7/08/2009	SE71274-1 9 DC7 Soil 7/08/2009	SE71274-2 0 DC8 Soil 7/08/2009
Date Analysed (moisture)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Moisture	%	20	39	3	7	4

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Moisture Our Reference:	UNITS	SE71274-21	SE71274-22	SE71274-23	SE71274-24	SE71274-27
Your Reference	-------------	DC9	DC10	QC13	QC14	DC13
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		7/08/2009	7/08/2009	7/08/2009	7/08/2009	10/08/2009
Depth						
Date Analysed (moisture)		13/08/2009	13/08/2009	13/08/2009	13/08/2009	13/08/2009
Moisture	%	6	9	11	3	4

Moisture Our Reference:	UNITS	SE71274-28	SE71274-30	SE71274-31
Your Reference	-------------	DC12	DC3	DC4
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		10/08/2009	10/08/2009	10/08/2009
Depth				
Date Analysed (moisture)		13/08/2009	13/08/2009	13/08/2009
Moisture	%	7	7	4

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Method ID	Methodology Summary
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.
AN420	Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates, and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD/FID technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
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.
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.
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 $\pm$ 5°C.

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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
Date Extracted				14/08/09	SE71274-30	14/08/2009 || 14/08/2009	SE71274-16	14/08/09
Date Analysed				14/08/09	SE71274-30	14/08/2009 || 14/08/2009	SE71274-16	14/08/09
HCB	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
gamma-BHC (Lindane)	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
Heptachlor	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	SE71274-16	124%
Aldrin	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	SE71274-16	130%
beta-BHC	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
delta-BHC	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	SE71274-16	122%
Heptachlor Epoxide	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
o,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
alpha-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
trans-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
cis-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
trans-Nonachlor	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
p,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
Dieldrin	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	SE71274-16	127%
Endrin	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	SE71274-16	122%
o,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
o,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
beta-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
p,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
p,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	SE71274-16	130%

QUALITY CONTROL OC Pesticides in Soil	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Endosulfan Sulphate	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
Methoxychlor	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
Endrin Ketone	mg/kg	0.1	SEO-005	<0.1	SE71274-30	<0.1 || <0.1	[NR]	[NR]
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	0	SEO-005	107	SE71274-30	103 || 104 || RPD: 1	SE71274-16	118%

QUALITY CONTROL OP Pesticides in Soil by GCMS	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				14/08/09	SE71274-30	14/08/2009 || 14/08/2009	SE71274-17	14/08/09
Date Analysed				14/08/09	SE71274-30	14/08/2009 || 14/08/2009	SE71274-17	14/08/09
Dichlorvos	mg/kg	1	AN420	<1	SE71274-30	<1 || <1	SE71274-17	80%
Dimethoate	mg/kg	1	AN420	<1	SE71274-30	<1 || <1	[NR]	[NR]
Diazinon	mg/kg	0.5	AN420	<0.5	SE71274-30	<0.5 || <0.5	SE71274-17	88%
Fenitrothion	mg/kg	0.2	AN420	<0.2	SE71274-30	<0.2 || <0.2	[NR]	[NR]
Malathion	mg/kg	0.2	AN420	<0.20	SE71274-30	<0.20 || <0.20	[NR]	[NR]
Chlorpyrifos-ethyl	mg/kg	0.2	AN420	<0.2	SE71274-30	<0.2 || <0.2	SE71274-17	86%
Parathion-ethyl	mg/kg	0.2	AN420	<0.2	SE71274-30	<0.2 || <0.2	[NR]	[NR]
Bromofos-ethyl	mg/kg	0.2	AN420	<0.2	SE71274-30	<0.2 || <0.2	[NR]	[NR]
Methidathion	mg/kg	0.5	AN420	<0.5	SE71274-30	<0.5 || <0.5	[NR]	[NR]
Ethion	mg/kg	0.2	AN420	<0.2	SE71274-30	<0.2 || <0.2	SE71274-17	107%
Azinphos-methyl	mg/kg	0.2	AN420	<0.20	SE71274-30	<0.20 || <0.20	SE71274-17	100%
2-fluorobiphenyl (Surr)	%	0	AN420	108	SE71274-30	104 || 108 || RPD: 4	SE71274-17	120%
d14-p-Terphenyl (Surr)	%	0	AN420	108	SE71274-30	104 || 108 || RPD: 4	SE71274-17	116%

QUALITY CONTROL Inorganics	UNITS	LOR	METHOD	Blank
Date Extracted- (pH 1:5 soil: Water)				[NT]
Date Analysed (pH 1:5 Soil: Water)				[NT]
pH 1:5 soil:water 1:5 soil:water	pH Units	0	AN101	[NT]
Date Extracted (pH)				[NT]
Date Analysed (pH)				[NT]
pH	pH Units	0	AN101	[NT]

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)				13/08/2009	SE71274-1	13/08/2009 || 13/08/2009	SE71274-2	13/08/2009
Date Analysed (Metals)				13/08/2009	SE71274-1	13/08/2009 || 13/08/2009	SE71274-2	13/08/2009
Arsenic	mg/kg	3	SEM-010	<3	SE71274-1	9 || 11 || RPD: 20	SE71274-2	90%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE71274-1	0.6 || 0.6 || RPD: 0	SE71274-2	84%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE71274-1	19 || 20 || RPD: 5	SE71274-2	87%
Copper	mg/kg	0.5	SEM-010	<0.5	SE71274-1	13 || 12 || RPD: 8	SE71274-2	91%
Lead	mg/kg	1	SEM-010	<1	SE71274-1	120 || 120 || RPD: 0	SE71274-2	79%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE71274-1	12 || 13 || RPD: 8	SE71274-2	83%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE71274-1	280 || 260 || RPD: 7	SE71274-2	118%

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)				13/08/09	SE71274-1	13/08/2009 || 13/08/2009	SE71274-2	13/08/09
Date Analysed (Mercury)				13/08/09	SE71274-1	13/08/2009 || 13/08/2009	SE71274-2	13/08/09
Mercury	mg/kg	0.05	SEM-005	<0.05	SE71274-1	<0.05 || <0.05	SE71274-2	113%

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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)				15/08/09	[NT]	[NT]	LCS	15/08/09
Date Analysed (BTEX)				15/08/09	[NT]	[NT]	LCS	15/08/09
Benzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	96%
Toluene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	98%
Ethylbenzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	97%
Total Xylenes	µg/L	1.5	SEO-018	<1.5	[NT]	[NT]	LCS	97%
Surrogate	%	0	SEO-018	100	[NT]	[NT]	LCS	123%

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				17/08/09	[NT]	[NT]	LCS	17/08/09
Date Analysed				17/08/09	[NT]	[NT]	LCS	17/08/09
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	107%
Aldrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	114%
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	104%
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	107%
Endrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	110%
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	112%
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]

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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
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	95	[NT]	[NT]	LCS	103%

QUALITY CONTROL OP Pesticides in Water by GCMS	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				14/08/09	[NT]	[NT]	LCS	14/08/09
Date Analysed				14/08/09	[NT]	[NT]	LCS	14/08/09
Dichlorvos	µg/L	1	AN420	<1	[NT]	[NT]	LCS	87%
Dimethoate	µg/L	1	AN420	<1	[NT]	[NT]	[NR]	[NR]
Diazinon	µg/L	0.5	AN420	<0.5	[NT]	[NT]	LCS	104%
Fenitrothion	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Malathion	µg/L	0.2	AN420	<0.20	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	LCS	128%
Parathion-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Bromofos-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Methidathion	µg/L	0.5	AN420	<0.5	[NT]	[NT]	[NR]	[NR]
Ethion	µg/L	0.2	AN420	<0.2	[NT]	[NT]	LCS	105%
Azinphos-methyl	µg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	76%
2-fluorobiphenyl (Surr)	%	0	AN420	80	[NT]	[NT]	LCS	73%
d14-p-Terphenyl (Surr)	%	0	AN420	80	[NT]	[NT]	LCS	80%

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)				12/08/09	[NT]	[NT]	LCS	12/08/09
Date Analysed (Metals-ICPMS)				12/08/09	[NT]	[NT]	LCS	12/08/09
Arsenic	µg/L	1	AN318	<1	[NT]	[NT]	LCS	93%
Cadmium	µg/L	0.1	AN318	<0.1	[NT]	[NT]	LCS	102%
Chromium	µg/L	1	AN318	<1	[NT]	[NT]	LCS	100%
Copper	µg/L	1	AN318	<1	[NT]	[NT]	LCS	104%
Lead	µg/L	1	AN318	<1	[NT]	[NT]	LCS	105%
Nickel	µg/L	1	AN318	<1	[NT]	[NT]	LCS	101%
Zinc	µg/L	1	AN318	<1	[NT]	[NT]	LCS	109%

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)				14/08/09	[NT]	[NT]	LCS	14/08/09
Date Analysed (Mercury)				14/08/09	[NT]	[NT]	LCS	14/08/09
Mercury at MDL - Dissolved	mg/L	0.0001	SEM-005	<0.0001	[NT]	[NT]	LCS	105%

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

QUALITY CONTROL OC Pesticides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted		SE71274-15	14/08/2009 || 14/08/2009
Date Analysed		SE71274-15	14/08/2009 || 14/08/2009
HCB	mg/kg	SE71274-15	<0.1 || <0.1
alpha-BHC	mg/kg	SE71274-15	<0.1 || <0.1
gamma-BHC (Lindane)	mg/kg	SE71274-15	<0.1 || <0.1

QUALITY CONTROL OC Pesticides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Heptachlor	mg/kg	SE71274-15	<0.1 || <0.1
Aldrin	mg/kg	SE71274-15	<0.1 || <0.1
beta-BHC	mg/kg	SE71274-15	<0.1 || <0.1
delta-BHC	mg/kg	SE71274-15	<0.1 || <0.1
Heptachlor Epoxide	mg/kg	SE71274-15	<0.1 || <0.1
o,p-DDE	mg/kg	SE71274-15	<0.1 || <0.1
alpha-Endosulfan	mg/kg	SE71274-15	<0.1 || <0.1
trans-Chlordane	mg/kg	SE71274-15	<0.1 || <0.1
cis-Chlordane	mg/kg	SE71274-15	<0.1 || <0.1
trans-Nonachlor	mg/kg	SE71274-15	<0.1 || <0.1
p,p-DDE	mg/kg	SE71274-15	<0.1 || <0.1
Dieldrin	mg/kg	SE71274-15	<0.1 || <0.1
Endrin	mg/kg	SE71274-15	<0.1 || <0.1
o,p-DDD	mg/kg	SE71274-15	<0.1 || <0.1
o,p-DDT	mg/kg	SE71274-15	<0.1 || <0.1
beta-Endosulfan	mg/kg	SE71274-15	<0.1 || <0.1
p,p-DDD	mg/kg	SE71274-15	<0.1 || <0.1
p,p-DDT	mg/kg	SE71274-15	<0.1 || <0.1
Endosulfan Sulphate	mg/kg	SE71274-15	<0.1 || <0.1
Endrin Aldehyde	mg/kg	SE71274-15	<0.1 || <0.1
Methoxychlor	mg/kg	SE71274-15	<0.1 || <0.1
Endrin Ketone	mg/kg	SE71274-15	<0.1 || <0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	SE71274-15	109 || 110 || RPD: 1

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QUALITY CONTROL OP Pesticides in Soil by GCMS	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted		SE71274-15	14/08/2009 || 14/08/2009
Date Analysed		SE71274-15	14/08/2009 || 14/08/2009
Dichlorvos	mg/kg	SE71274-15	<1 || <1
Dimethoate	mg/kg	SE71274-15	<1 || <1
Diazinon	mg/kg	SE71274-15	<0.5 || <0.5
Fenitrothion	mg/kg	SE71274-15	<0.2 || <0.2
Malathion	mg/kg	SE71274-15	<0.20 || <0.20
Chlorpyrifos-ethyl	mg/kg	SE71274-15	<0.2 || <0.2
Parathion-ethyl	mg/kg	SE71274-15	<0.2 || <0.2
Bromofos-ethyl	mg/kg	SE71274-15	<0.2 || <0.2
Methidathion	mg/kg	SE71274-15	<0.5 || <0.5
Ethion	mg/kg	SE71274-15	<0.2 || <0.2
Azinphos-methyl	mg/kg	SE71274-15	<0.20 || <0.20
2-fluorobiphenyl (Surr)	%	SE71274-15	108 || 116 || RPD: 7
d14-p-Terphenyl (Surr)	%	SE71274-15	120 || 104 || RPD: 14

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QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE71274-1 1	13/08/2009 || 13/08/2009
Date Analysed (Metals)		SE71274-1 1	13/08/2009 || 13/08/2009
Arsenic	mg/kg	SE71274-1 1	6 || 6 || RPD: 0
Cadmium	mg/kg	SE71274-1 1	<0.3 || <0.3
Chromium	mg/kg	SE71274-1 1	14 || 14 || RPD: 0
Copper	mg/kg	SE71274-1 1	11 || 10 || RPD: 10
Lead	mg/kg	SE71274-1 1	26 || 24 || RPD: 8
Nickel	mg/kg	SE71274-1 1	18 || 18 || RPD: 0
Zinc	mg/kg	SE71274-1 1	51 || 51 || RPD: 0

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Mercury)		SE71274-1 1	13/08/2009 || 13/08/2009	SE71274-2 2	13/08/09
Date Analysed (Mercury)		SE71274-1 1	13/08/2009 || 13/08/2009	SE71274-2 2	13/08/09
Mercury	mg/kg	SE71274-1 1	<0.05 || <0.05	SE71274-2 2	119%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE71274-2 1	13/08/2009 || 13/08/2009
Date Analysed (Mercury)		SE71274-2 1	13/08/2009 || 13/08/2009
Mercury	mg/kg	SE71274-2 1	<0.05 || <0.05

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

pH: Insufficient time was allowed to analyse samples within holding time
Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced: 15/08/09
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
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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

ANALYTICAL REPORT

14 August 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Chris Gunton**

Your Reference: EC00233AA

Our Reference: SE71199

Samples: 44 Soils, 2 Waters
Received: 7/8/09

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 Sakarmis
Inorganics Signatory

Ly Kim Ha
Organics Signatory

Huong Crawford
Metals Signatory

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Inorganics Our Reference:	UNITS	SE71199-1	SE71199-7	SE71199-13	SE71199-17	SE71199-19
Your Reference	-------------	MS4-1_0.0-0.2	MS4-4_0.0-0.2	MS4-7_0.0-0.2	MS4-11_0.0-0.2	MS4-12_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted- (pH 1:5 soil: Water)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (pH 1:5 Soil: Water)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
pH 1:5 soil:water 1:5 soil:water	pH Units	7.1	7.3	7.9	7.6	7.1

Inorganics Our Reference:	UNITS	SE71199-23	SE71199-27	SE71199-31	SE71199-39	SE71199-45
Your Reference	-------------	MS4-14_0.0-0.2	MS4-18_0.0-0.2	MS4-21_0.0-0.2	MS4-26A_0.0-0.2	WB6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Water
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted- (pH 1:5 soil: Water)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	[NA]
Date Analysed (pH 1:5 Soil: Water)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	[NA]
pH 1:5 soil:water 1:5 soil:water	pH Units	7.2	7.2	7.6	8.9	[NA]
Date Extracted (pH)		[NA]	[NA]	[NA]	[NA]	10/08/2009
Date Analysed (pH)		[NA]	[NA]	[NA]	[NA]	10/08/2009
pH	pH Units	[NA]	[NA]	[NA]	[NA]	6.4

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-1 MS4-1_0.0-0.2 Soil 6/08/2009	SE71199-2 MS4-1_0.5-0.6 Soil 6/08/2009	SE71199-3 MS4-2_0.0-0.2 Soil 6/08/2009	SE71199-4 MS4-2_0.5-0.6 Soil 6/08/2009	SE71199-5 MS4-3_0.0-0.2 Soil 6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	6	6	6	9	4
Cadmium	mg/kg	0.3	<0.3	0.4	<0.3	<0.3
Chromium	mg/kg	21	25	22	27	17
Copper	mg/kg	11	13	12	15	10
Lead	mg/kg	63	41	65	29	45
Nickel	mg/kg	16	16	19	18	12
Zinc	mg/kg	130	76	140	53	96

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-6 MS4-3_0.5-0.6 Soil 6/08/2009	SE71199-7 MS4-4_0.0-0.2 Soil 6/08/2009	SE71199-8 MS4-4_0.5-0.6 Soil 6/08/2009	SE71199-9 MS4-5_0.0-0.2 Soil 6/08/2009	SE71199-10 MS4-5_0.5-0.6 Soil 6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	5	5	5	7	7
Cadmium	mg/kg	0.3	0.5	0.5	0.4	0.4
Chromium	mg/kg	20	20	21	20	19
Copper	mg/kg	13	14	14	15	16
Lead	mg/kg	48	47	45	58	53
Nickel	mg/kg	15	14	16	20	21
Zinc	mg/kg	110	120	110	180	160

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-11 MS4-6_0.0-0.2 Soil 6/08/2009	SE71199-12 MS4-6_0.5-0.6 Soil 6/08/2009	SE71199-13 MS4-7_0.0-0.2 Soil 6/08/2009	SE71199-14 MS4-8_0.0-0.2 Soil 6/08/2009	SE71199-15 MS4-9_0.0-0.2 Soil 6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	9	8	26	26	33
Cadmium	mg/kg	0.5	0.4	7.4	7.6	7.2
Chromium	mg/kg	24	22	18	18	21
Copper	mg/kg	15	15	120	130	52
Lead	mg/kg	85	74	6,300	7,400	1,300
Nickel	mg/kg	22	21	19	17	20
Zinc	mg/kg	190	170	11,000	8,900	2,400

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-16 MS4-10_0.0-0.2 Soil 6/08/2009	SE71199-17 MS4-11_0.0-0.2 Soil 6/08/2009	SE71199-18 MS4-11_0.5-0.6 Soil 6/08/2009	SE71199-19 MS4-12_0.0-0.2 Soil 6/08/2009	SE71199-20 MS4-12_0.5-0.6 Soil 6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	8	9	6	8	8
Cadmium	mg/kg	0.4	0.4	<0.3	0.5	0.4
Chromium	mg/kg	24	22	18	21	24
Copper	mg/kg	16	16	15	17	17
Lead	mg/kg	130	69	43	490	390
Nickel	mg/kg	21	21	16	15	18
Zinc	mg/kg	200	170	130	410	360

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-21 MS4-13_0.0-0.2 Soil 6/08/2009	SE71199-22 MS4-13_0.5-0.6 Soil 6/08/2009	SE71199-23 MS4-14_0.0-0.2 Soil 6/08/2009	SE71199-24 MS4-15_0.0-0.2 Soil 6/08/2009	SE71199-25 MS4-16_0.0-0.2 Soil 6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	8	8	55	13	9
Cadmium	mg/kg	0.4	0.4	48	3.5	0.5
Chromium	mg/kg	19	20	12	18	20
Copper	mg/kg	15	15	130	28	12
Lead	mg/kg	440	420	14,000	1,100	38
Nickel	mg/kg	14	15	10	14	18
Zinc	mg/kg	410	410	20,000	1,200	210

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-26 MS4-17_0.0-0.2 Soil 6/08/2009	SE71199-27 MS4-18_0.0-0.2 Soil 6/08/2009	SE71199-28 MS4-18_0.5-0.6 Soil 6/08/2009	SE71199-29 MS4-19_0.0-0.2 Soil 6/08/2009	SE71199-30 MS4-20_0.0-0.2 Soil 6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	8	8	10	10	9
Cadmium	mg/kg	0.6	1.9	0.97	0.6	0.5
Chromium	mg/kg	19	22	32	19	20
Copper	mg/kg	11	18	22	13	14
Lead	mg/kg	35	370	160	44	39
Nickel	mg/kg	17	20	24	17	18
Zinc	mg/kg	210	770	700	220	170

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71199-31	SE71199-32	SE71199-33	SE71199-34	SE71199-35
Your Reference	-------------	MS4-21_0.0-0.2	MS4-22_0.0-0.2	MS4-23_0.0-0.2	MS4-24_0.0-0.2	MS4-24_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	10	20	23	12	9
Cadmium	mg/kg	0.6	1.8	4.2	2.8	1.1
Chromium	mg/kg	20	20	14	20	34
Copper	mg/kg	13	39	120	27	26
Lead	mg/kg	48	1,300	5,100	1,300	200
Nickel	mg/kg	18	15	11	14	24
Zinc	mg/kg	220	1,000	2,400	1,100	810

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71199-36	SE71199-37	SE71199-38	SE71199-39	SE71199-40
Your Reference	-------------	MS4-25_0.0-0.2	MS4-25_0.5-0.6	MS4-26_0.0-0.2	MS4-26A_0.0-0.2	MS4-26A_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	9	10	6	5	18
Cadmium	mg/kg	0.5	1.1	0.4	0.5	240
Chromium	mg/kg	22	22	20	2.2	11
Copper	mg/kg	20	19	10	4.1	52
Lead	mg/kg	510	650	350	15	1,400
Nickel	mg/kg	15	15	16	2.0	13
Zinc	mg/kg	490	640	220	180	57,000

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-41 MS4-27_0.0-0.2 Soil 6/08/2009	SE71199-42 MS4-28_0.0-0.2 Soil 6/08/2009	SE71199-43 QC11 Soil 6/08/2009	SE71199-44 QC12 Soil 6/08/2009
Date Extracted (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Metals)		11/08/2009	11/08/2009	11/08/2009	11/08/2009
Arsenic	mg/kg	80	17	6	8
Cadmium	mg/kg	11	0.4	<0.3	0.5
Chromium	mg/kg	11	25	20	20
Copper	mg/kg	530	12	11	15
Lead	mg/kg	46,000	39	60	450
Nickel	mg/kg	7.1	20	16	14
Zinc	mg/kg	10,000	83	120	440

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71199-1	SE71199-2	SE71199-3	SE71199-4	SE71199-5
Your Reference	-------------	MS4-1_0.0-0.2	MS4-1_0.5-0.6	MS4-2_0.0-0.2	MS4-2_0.5-0.6	MS4-3_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71199-6	SE71199-7	SE71199-8	SE71199-9	SE71199-10
Your Reference	-------------	MS4-3_0.5-0.6	MS4-4_0.0-0.2	MS4-4_0.5-0.6	MS4-5_0.0-0.2	MS4-5_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71199-11	SE71199-12	SE71199-13	SE71199-14	SE71199-15
Your Reference	-------------	MS4-6_0.0-0.2	MS4-6_0.5-0.6	MS4-7_0.0-0.2	MS4-8_0.0-0.2	MS4-9_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	<0.05	0.54	0.63	0.18

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71199-16	SE71199-17	SE71199-18	SE71199-19	SE71199-20
Your Reference	-------------	MS4-10_0.0-0.2	MS4-11_0.0-0.2	MS4-11_0.5-0.6	MS4-12_0.0-0.2	MS4-12_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71199-21	SE71199-22	SE71199-23	SE71199-24	SE71199-25
Your Reference	-------------	MS4-13_0.0-0.2	MS4-13_0.5-0.6	MS4-14_0.0-0.2	MS4-15_0.0-0.2	MS4-16_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	<0.05	0.67	0.12	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71199-26	SE71199-27	SE71199-28	SE71199-29	SE71199-30
Your Reference	-------------	MS4-17_0.0-0.2	MS4-18_0.0-0.2	MS4-18_0.5-0.6	MS4-19_0.0-0.2	MS4-20_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Depth						
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71199-31	SE71199-32	SE71199-33	SE71199-34	SE71199-35
Your Reference	-------------	MS4-21_0.0-0.2	MS4-22_0.0-0.2	MS4-23_0.0-0.2	MS4-24_0.0-0.2	MS4-24_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	0.27	0.85	0.12	0.07

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71199-36	SE71199-37	SE71199-38	SE71199-39	SE71199-40
Your Reference	-------------	MS4-25_0.0-0.2	MS4-25_0.5-0.6	MS4-26_0.0-0.2	MS4-26A_0.0-0.2	MS4-26A_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71199-41	SE71199-42	SE71199-43	SE71199-44
Your Reference	-------------	MS4-27_0.0-0.2	MS4-28_0.0-0.2	QC11	QC12
Sample Matrix	------------	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Extracted (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Mercury)		11/08/2009	11/08/2009	11/08/2009	11/08/2009
Mercury	mg/kg	3.7	<0.05	<0.05	<0.05

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BTEX in Water (µg/L)		
Our Reference:	UNITS	SE71199-46
Your Reference	-------------	TB8
Sample Matrix	------------	Water
Date Sampled		6/08/2009
Depth		
Date Extracted (BTEX)		10/08/2009
Date Analysed (BTEX)		10/08/2009
Benzene	µg/L	<0.5
Toluene	µg/L	<0.5
Ethylbenzene	µg/L	<0.5
Total Xylenes	µg/L	<1.5
Surrogate	%	71

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Trace HM (ICP-MS)-Dissolved Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-4 5 WB6 Water 6/08/2009
Date Extracted (Metals-ICPMS)		10/08/2009
Date Analysed (Metals-ICPMS)		10/08/2009
Arsenic	µg/L	<1
Cadmium	µg/L	<0.1
Chromium	µg/L	<1
Copper	µg/L	<1
Lead	µg/L	<1
Nickel	µg/L	<1
Zinc	µg/L	<1

Mercury Cold Vapor/Hg Analyser Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-4 5 WB6 Water 6/08/2009
Date Extracted (Mercury)		11/08/2009
Date Analysed (Mercury)		11/08/2009
Mercury at MDL - Dissolved	mg/L	<0.0001

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-1 MS4-1_0.0-0.2 Soil 6/08/2009	SE71199-2 MS4-1_0.5-0.6 Soil 6/08/2009	SE71199-3 MS4-2_0.0-0.2 Soil 6/08/2009	SE71199-4 MS4-2_0.5-0.6 Soil 6/08/2009	SE71199-5 MS4-3_0.0-0.2 Soil 6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	16	12	14	11	9

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-6 MS4-3_0.5-0.6 Soil 6/08/2009	SE71199-7 MS4-4_0.0-0.2 Soil 6/08/2009	SE71199-8 MS4-4_0.5-0.6 Soil 6/08/2009	SE71199-9 MS4-5_0.0-0.2 Soil 6/08/2009	SE71199-10 MS4-5_0.5-0.6 Soil 6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	10	12	12	16	17

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-11 MS4-6_0.0-0.2 Soil 6/08/2009	SE71199-12 MS4-6_0.5-0.6 Soil 6/08/2009	SE71199-13 MS4-7_0.0-0.2 Soil 6/08/2009	SE71199-14 MS4-8_0.0-0.2 Soil 6/08/2009	SE71199-15 MS4-9_0.0-0.2 Soil 6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	9.9	11	7	8	9

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-16 MS4-10_0.0-0.2 Soil 6/08/2009	SE71199-17 MS4-11_0.0-0.2 Soil 6/08/2009	SE71199-18 MS4-11_0.5-0.6 Soil 6/08/2009	SE71199-19 MS4-12_0.0-0.2 Soil 6/08/2009	SE71199-20 MS4-12_0.5-0.6 Soil 6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	14	16	10	12	9

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Moisture Our Reference:	UNITS	SE71199-21	SE71199-22	SE71199-23	SE71199-24	SE71199-25
Your Reference	-------------	MS4-13_0.0-0.2	MS4-13_0.5-0.6	MS4-14_0.0-0.2	MS4-15_0.0-0.2	MS4-16_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	14	13	3	15	4

Moisture Our Reference:	UNITS	SE71199-26	SE71199-27	SE71199-28	SE71199-29	SE71199-30
Your Reference	-------------	MS4-17_0.0-0.2	MS4-18_0.0-0.2	MS4-18_0.5-0.6	MS4-19_0.0-0.2	MS4-20_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	3	16	19	2	4

Moisture Our Reference:	UNITS	SE71199-31	SE71199-32	SE71199-33	SE71199-34	SE71199-35
Your Reference	-------------	MS4-21_0.0-0.2	MS4-22_0.0-0.2	MS4-23_0.0-0.2	MS4-24_0.0-0.2	MS4-24_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	4	9	9	14	17

Moisture Our Reference:	UNITS	SE71199-36	SE71199-37	SE71199-38	SE71199-39	SE71199-40
Your Reference	-------------	MS4-25_0.0-0.2	MS4-25_0.5-0.6	MS4-26_0.0-0.2	MS4-26A_0.0-0.2	MS4-26A_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		6/08/2009	6/08/2009	6/08/2009	6/08/2009	6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	14	12	11	28	15

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Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71199-4 1 MS4-27_0. 0-0.2 Soil 6/08/2009	SE71199-4 2 MS4-28_0. 0-0.2 Soil 6/08/2009	SE71199-4 3 QC11 Soil 6/08/2009	SE71199-4 4 QC12 Soil 6/08/2009
Date Analysed (moisture)		11/08/2009	11/08/2009	11/08/2009	11/08/2009
Moisture	%	13	8	14	12

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Method ID	Methodology Summary
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
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.
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.
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.

QUALITY CONTROL Inorganics	UNITS	LOR	METHOD	Blank
Date Extracted- (pH 1:5 soil: Water)				[NT]
Date Analysed (pH 1:5 Soil: Water)				[NT]
pH 1:5 soil:water 1:5 soil:water	pH Units	0	AN101	[NT]
Date Extracted (pH)				[NT]
Date Analysed (pH)				[NT]
pH	pH Units	0	AN101	[NT]

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)				11/08/2009	SE71199-1	11/08/2009 || 11/08/2009	SE71199-2	11/08/2009
Date Analysed (Metals)				11/08/2009	SE71199-1	11/08/2009 || 11/08/2009	SE71199-2	11/08/2009
Arsenic	mg/kg	3	SEM-010	<3	SE71199-1	6 || 6 || RPD: 0	SE71199-2	85%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE71199-1	0.3 || 0.3 || RPD: 0	SE71199-2	85%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE71199-1	21 || 21 || RPD: 0	SE71199-2	83%
Copper	mg/kg	0.5	SEM-010	<0.5	SE71199-1	11 || 12 || RPD: 9	SE71199-2	87%
Lead	mg/kg	1	SEM-010	<1	SE71199-1	63 || 75 || RPD: 17	SE71199-2	77%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE71199-1	16 || 16 || RPD: 0	SE71199-2	84%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE71199-1	130 || 140 || RPD: 7	SE71199-2	90%

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)				12/08/09	SE71199-1	11/08/2009 || 11/08/2009	SE71199-2	11/08/09
Date Analysed (Mercury)				12/08/09	SE71199-1	11/08/2009 || 11/08/2009	SE71199-2	11/08/09
Mercury	mg/kg	0.05	SEM-005	<0.05	SE71199-1	<0.05 || <0.05	SE71199-2	114%

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)				10/08/09	[NT]	[NT]	LCS	10/08/09
Date Analysed (BTEX)				10/08/09	[NT]	[NT]	LCS	10/08/09
Benzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	103%
Toluene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	105%
Ethylbenzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	105%
Total Xylenes	µg/L	1.5	SEO-018	<1.5	[NT]	[NT]	LCS	104%
Surrogate	%	0	SEO-018	98	[NT]	[NT]	LCS	81%

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)				10/08/2009	[NT]	[NT]	SE71199-1	10/08/2009
Date Analysed (Metals-ICPMS)				10/08/2009	[NT]	[NT]	SE71199-1	10/08/2009
Arsenic	µg/L	1	AN318	<1	[NT]	[NT]	SE71199-1	114%
Cadmium	µg/L	0.1	AN318	<0.1	[NT]	[NT]	SE71199-1	100%
Chromium	µg/L	1	AN318	<1	[NT]	[NT]	SE71199-1	99%
Copper	µg/L	1	AN318	<1	[NT]	[NT]	SE71199-1	99%
Lead	µg/L	1	AN318	<1	[NT]	[NT]	SE71199-1	108%
Nickel	µg/L	1	AN318	<1	[NT]	[NT]	SE71199-1	97%
Zinc	µg/L	1	AN318	<1	[NT]	[NT]	SE71199-1	101%

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)				11/08/09	[NT]	[NT]	LCS	11/08/09
Date Analysed (Mercury)				11/08/09	[NT]	[NT]	LCS	11/08/09
Mercury at MDL - Dissolved	mg/L	0.0001	SEM-005	<0.0001	[NT]	[NT]	LCS	108%

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

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)		SE71199-1 1	11/08/2009 || 11/08/2009	SE71199-2 2	11/08/2009
Date Analysed (Metals)		SE71199-1 1	11/08/2009 || 11/08/2009	SE71199-2 2	11/08/2009
Arsenic	mg/kg	SE71199-1 1	9 || 9 || RPD: 0	SE71199-2 2	87%
Cadmium	mg/kg	SE71199-1 1	0.5 || 0.5 || RPD: 0	SE71199-2 2	86%
Chromium	mg/kg	SE71199-1 1	24 || 24 || RPD: 0	SE71199-2 2	86%
Copper	mg/kg	SE71199-1 1	15 || 14 || RPD: 7	SE71199-2 2	88%
Lead	mg/kg	SE71199-1 1	85 || 93 || RPD: 9	[NR]	[NR]
Nickel	mg/kg	SE71199-1 1	22 || 20 || RPD: 10	SE71199-2 2	82%
Zinc	mg/kg	SE71199-1 1	190 || 210 || RPD: 10	[NR]	[NR]

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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)		SE71199-1 1	11/08/2009 || 11/08/2009	SE71199-2 2	11/08/09
Date Analysed (Mercury)		SE71199-1 1	11/08/2009 || 11/08/2009	SE71199-2 2	11/08/09
Mercury	mg/kg	SE71199-1 1	<0.05 || <0.05	SE71199-2 2	110%

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)		SE71199-2 1	11/08/2009 || 11/08/2009	SE71199-4 2	11/08/2009
Date Analysed (Metals)		SE71199-2 1	11/08/2009 || 11/08/2009	SE71199-4 2	11/08/2009
Arsenic	mg/kg	SE71199-2 1	8 || 8 || RPD: 0	SE71199-4 2	79%
Cadmium	mg/kg	SE71199-2 1	0.4 || 0.4 || RPD: 0	SE71199-4 2	71%
Chromium	mg/kg	SE71199-2 1	19 || 21 || RPD: 10	SE71199-4 2	73%
Copper	mg/kg	SE71199-2 1	15 || 16 || RPD: 6	SE71199-4 2	80%
Lead	mg/kg	SE71199-2 1	440 || 440 || RPD: 0	[NR]	[NR]
Nickel	mg/kg	SE71199-2 1	14 || 15 || RPD: 7	SE71199-4 2	72%
Zinc	mg/kg	SE71199-2 1	410 || 410 || RPD: 0	SE71199-4 2	92%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE71199-2 1	11/08/2009 || 11/08/2009
Date Analysed (Mercury)		SE71199-2 1	11/08/2009 || 11/08/2009
Mercury	mg/kg	SE71199-2 1	<0.05 || <0.05

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)		SE71199-3 1	11/08/2009 || 11/08/2009	LCS	11/08/2009
Date Analysed (Metals)		SE71199-3 1	11/08/2009 || 11/08/2009	LCS	11/08/2009
Arsenic	mg/kg	SE71199-3 1	10 || 9 || RPD: 11	[NR]	[NR]
Cadmium	mg/kg	SE71199-3 1	0.6 || 0.5 || RPD: 18	[NR]	[NR]
Chromium	mg/kg	SE71199-3 1	20 || 19 || RPD: 5	[NR]	[NR]
Copper	mg/kg	SE71199-3 1	13 || 13 || RPD: 0	[NR]	[NR]
Lead	mg/kg	SE71199-3 1	48 || 44 || RPD: 9	LCS	97%
Nickel	mg/kg	SE71199-3 1	18 || 17 || RPD: 6	[NR]	[NR]
Zinc	mg/kg	SE71199-3 1	220 || 190 || RPD: 15	LCS	97%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE71199-31	11/08/2009 || 11/08/2009
Date Analysed (Mercury)		SE71199-31	11/08/2009 || 11/08/2009
Mercury	mg/kg	SE71199-31	<0.05 || <0.05

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE71199-41	11/08/2009 || 11/08/2009
Date Analysed (Metals)		SE71199-41	11/08/2009 || 11/08/2009
Arsenic	mg/kg	SE71199-41	80 || 65 || RPD: 21
Cadmium	mg/kg	SE71199-41	11 || 9.4 || RPD: 16
Chromium	mg/kg	SE71199-41	11 || 12 || RPD: 9
Copper	mg/kg	SE71199-41	530 || 410 || RPD: 26
Lead	mg/kg	SE71199-41	46000 || 27000 || RPD: 52
Nickel	mg/kg	SE71199-41	7.1 || 7.7 || RPD: 8
Zinc	mg/kg	SE71199-41	10000 || 9000 || RPD: 11

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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

-METALS_ESDAT_S: duplicate of # 41 is out of criteria due to sample's inhomogeneity.
Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced:
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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ANALYTICAL REPORT

17 August 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Chris Gunton**

Your Reference: EC00233AA

Our Reference: SE71167

Samples: 54 Soils, 4 Waters
Received: 6/8/09

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:

Edward Ibrahim
Laboratory Manager

Nick Sakarmis
Inorganics Signatory

Ly Kim Ha
Organics Signatory

Huong Crawford
Metals Signatory

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OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-1 MP1_0.0-0.2 Soil 4/08/2009	SE71167-4 MP2_0.0-0.2 Soil 4/08/2009	SE71167-10 MP4_0.0-0.2 Soil 4/08/2009	SE71167-24 MP9_0.0-0.2 Soil 4/08/2009	SE71167-27 MP10_0.0-0.2 Soil 4/08/2009
Date Extracted		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
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*	%	107	104	105	107	107

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OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-29 MP11_0.0-0.2 Soil 4/08/2009	SE71167-35 MP13_0.0-0.2 Soil 4/08/2009	SE71167-38 QC8 Soil 4/08/2009	SE71167-41 MP14_0.0-0.2 Soil 5/08/2009	SE71167-49 MPSUMP-1 Soil 5/08/2009
Date Extracted		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
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*	%	104	98	95	97	112

OC Pesticides in Soil Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-50 MPSUMP-2 Soil 5/08/2009	SE71167-51 SP1 Soil 5/08/2009	SE71167-52 SP2 Soil 5/08/2009	SE71167-53 SP3 Soil 5/08/2009	SE71167-54 SP4 Soil 5/08/2009
Date Extracted		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
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*	%	120	99	95	94	93

OC Pesticides in Soil		
Our Reference:	UNITS	SE71167-5 5
Your Reference	-------------	QC9
Sample Matrix	------------	Soil
Date Sampled		5/08/2009
Depth		
Date Extracted		10/08/2009
Date Analysed		10/08/2009
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC (Lindane)	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
Aldrin	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
o,p-DDE	mg/kg	<0.1
alpha-Endosulfan	mg/kg	<0.1
trans-Chlordane	mg/kg	<0.1
cis-Chlordane	mg/kg	<0.1
trans-Nonachlor	mg/kg	<0.1
p,p-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
o,p-DDD	mg/kg	<0.1
o,p-DDT	mg/kg	<0.1
beta-Endosulfan	mg/kg	<0.1
p,p-DDD	mg/kg	<0.1
p,p-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Endrin Ketone	mg/kg	<0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	91

Cyanide Our Reference:	UNITS	SE71167-1	SE71167-4	SE71167-10	SE71167-24	SE71167-27
Your Reference	-------------	MP1_0.0-0.2	MP2_0.0-0.2	MP4_0.0-0.2	MP9_0.0-0.2	MP10_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted (Total Cyanide)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Total Cyanide)		12/08/2009	12/08/2009	12/08/2009	12/08/2009	12/08/2009
Total Cyanide	mg/kg	0.2	0.1	0.1	<0.1	0.2

Cyanide Our Reference:	UNITS	SE71167-29	SE71167-35	SE71167-38	SE71167-41	SE71167-49
Your Reference	-------------	MP11_0.0-0.2	MP13_0.0-0.2	QC8	MP14_0.0-0.2	MPSUMP-1
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted (Total Cyanide)		11/08/2009	11/08/2009	11/08/2009	11/08/2009	11/08/2009
Date Analysed (Total Cyanide)		12/08/2009	12/08/2009	12/08/2009	12/08/2009	12/08/2009
Total Cyanide	mg/kg	0.2	0.2	0.2	0.5	0.6

Cyanide Our Reference:	UNITS	SE71167-50	SE71167-55
Your Reference	-------------	MPSUMP-2	QC9
Sample Matrix	------------	Soil	Soil
Date Sampled		5/08/2009	5/08/2009
Depth			
Date Extracted (Total Cyanide)		11/08/2009	11/08/2009
Date Analysed (Total Cyanide)		12/08/2009	12/08/2009
Total Cyanide	mg/kg	1.4	0.4

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-1 MP1_0.0-0.2 Soil 4/08/2009	SE71167-2 MP1_0.5-0.6 Soil 4/08/2009	SE71167-4 MP2_0.0-0.2 Soil 4/08/2009	SE71167-5 MP2_0.5-0.6 Soil 4/08/2009	SE71167-7 MP3_0.0-0.2 Soil 4/08/2009
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	12	11	13	11	10
Cadmium	mg/kg	0.5	0.3	0.6	0.4	0.4
Chromium	mg/kg	26	27	24	26	22
Copper	mg/kg	14	14	13	13	17
Lead	mg/kg	120	89	120	95	110
Nickel	mg/kg	14	12	13	13	16
Zinc	mg/kg	160	110	180	130	320

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-8 MP3_0.5-0.6 Soil 4/08/2009	SE71167-10 MP4_0.0-0.2 Soil 4/08/2009	SE71167-11 MP4_0.5-0.6 Soil 4/08/2009	SE71167-13 MP5_0.0-0.2 Soil 4/08/2009	SE71167-14 MP5_0.5-0.6 Soil 4/08/2009
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	10	20	15	20	21
Cadmium	mg/kg	0.3	0.6	0.4	0.6	0.6
Chromium	mg/kg	22	28	28	30	31
Copper	mg/kg	17	28	22	26	26
Lead	mg/kg	97	190	160	230	200
Nickel	mg/kg	16	18	18	25	25
Zinc	mg/kg	230	300	240	350	350

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-16 MP6_0.0-0.2 Soil 4/08/2009	SE71167-17 MP6_0.5-0.6 Soil 4/08/2009	SE71167-19 MP7_0.0-0.2 Soil 4/08/2009	SE71167-20 MP7_0.5-0.6 Soil 4/08/2009	SE71167-22 MP8_0.0-0.2 Soil 4/08/2009
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	22	18	7	7	10
Cadmium	mg/kg	1.1	0.8	<0.3	<0.3	0.3
Chromium	mg/kg	26	35	24	24	21
Copper	mg/kg	17	11	4.5	4.3	9.7
Lead	mg/kg	310	210	39	41	140
Nickel	mg/kg	19	26	11	9.9	11
Zinc	mg/kg	500	480	80	70	210

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-23 MP8_0.5-0.6 Soil 4/08/2009	SE71167-24 MP9_0.0-0.2 Soil 4/08/2009	SE71167-25 MP9_0.5-0.6 Soil 4/08/2009	SE71167-27 MP10_0.0-0.2 Soil 4/08/2009	SE71167-28 MP10_0.5-0.6 Soil 4/08/2009
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	11	26	37	28	28
Cadmium	mg/kg	0.4	0.5	0.7	0.6	0.5
Chromium	mg/kg	22	27	34	27	28
Copper	mg/kg	10	26	32	24	25
Lead	mg/kg	150	140	170	130	120
Nickel	mg/kg	11	23	24	20	21
Zinc	mg/kg	220	220	330	250	260

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71167-29	SE71167-30	SE71167-32	SE71167-33	SE71167-35
Your Reference	-------------	MP11_0.0-0.2	MP11_0.5-0.6	MP12_0.0-0.2	MP12_0.5-0.6	MP13_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	40	35	21	20	21
Cadmium	mg/kg	0.7	0.5	0.5	0.5	0.4
Chromium	mg/kg	30	25	25	23	26
Copper	mg/kg	29	23	19	20	19
Lead	mg/kg	190	110	97	94	99
Nickel	mg/kg	23	24	22	19	19
Zinc	mg/kg	330	200	210	200	200

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71167-36	SE71167-38	SE71167-41	SE71167-42	SE71167-44
Your Reference	-------------	MP13_0.5-0.6	QC8	MP14_0.0-0.2	MP14_0.5-0.6	MP15_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	5/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	22	10	33	30	45
Cadmium	mg/kg	0.4	0.4	2.2	2.3	2.1
Chromium	mg/kg	27	23	25	25	27
Copper	mg/kg	20	12	22	21	25
Lead	mg/kg	100	100	300	320	400
Nickel	mg/kg	20	12	20	19	22
Zinc	mg/kg	190	140	610	620	720

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Metals in Soil by ICP-OES Our Reference:	UNITS	SE71167-45	SE71167-46	SE71167-47	SE71167-49	SE71167-50
Your Reference	-------------	MP15_0.5-0.6	MP16_0.0-0.2	MP16_0.5-0.6	MPSUMP-1	MPSUMP-2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	41	17	18	96	45
Cadmium	mg/kg	2.1	0.94	1.3	1.8	9.6
Chromium	mg/kg	25	25	25	58	19
Copper	mg/kg	23	14	15	87	91
Lead	mg/kg	360	310	330	220	240
Nickel	mg/kg	20	14	16	19	22
Zinc	mg/kg	660	370	420	1,800	8,100

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71167-51	SE71167-52	SE71167-53	SE71167-54	SE71167-55
Your Reference	-------------	SP1	SP2	SP3	SP4	QC9
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Metals)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Arsenic	mg/kg	17	11	12	12	32
Cadmium	mg/kg	0.7	0.7	0.6	0.6	1.9
Chromium	mg/kg	21	21	19	22	24
Copper	mg/kg	23	17	18	17	20
Lead	mg/kg	90	62	60	60	300
Nickel	mg/kg	31	25	23	24	19
Zinc	mg/kg	450	200	210	180	580

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Metals in Soil by ICP-OES		
Our Reference:	UNITS	SE71167-56
Your Reference	-------------	QC10
Sample Matrix	------------	Soil
Date Sampled		5/08/2009
Depth		
Date Extracted (Metals)		10/08/2009
Date Analysed (Metals)		10/08/2009
Arsenic	mg/kg	15
Cadmium	mg/kg	0.8
Chromium	mg/kg	22
Copper	mg/kg	24
Lead	mg/kg	73
Nickel	mg/kg	30
Zinc	mg/kg	460

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Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71167-1	SE71167-2	SE71167-4	SE71167-5	SE71167-7
Your Reference	-------------	MP1_0.0-0.2	MP1_0.5-0.6	MP2_0.0-0.2	MP2_0.5-0.6	MP3_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71167-8	SE71167-10	SE71167-11	SE71167-13	SE71167-14
Your Reference	-------------	MP3_0.5-0.6	MP4_0.0-0.2	MP4_0.5-0.6	MP5_0.0-0.2	MP5_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71167-16	SE71167-17	SE71167-19	SE71167-20	SE71167-22
Your Reference	-------------	MP6_0.0-0.2	MP6_0.5-0.6	MP7_0.0-0.2	MP7_0.5-0.6	MP8_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71167-23	SE71167-24	SE71167-25	SE71167-27	SE71167-28
Your Reference	-------------	MP8_0.5-0.6	MP9_0.0-0.2	MP9_0.5-0.6	MP10_0.0-0.2	MP10_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71167-29	SE71167-30	SE71167-32	SE71167-33	SE71167-35
Your Reference	-------------	MP11_0.0-0.2	MP11_0.5-0.6	MP12_0.0-0.2	MP12_0.5-0.6	MP13_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE71167-36	SE71167-38	SE71167-41	SE71167-42	SE71167-44
Your Reference	-------------	MP13_0.5-0.6	QC8	MP14_0.0-0.2	MP14_0.5-0.6	MP15_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	5/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71167-45	SE71167-46	SE71167-47	SE71167-49	SE71167-50
Your Reference	-------------	MP15_0.5-0.6	MP16_0.0-0.2	MP16_0.5-0.6	MPSUMP-1	MPSUMP-2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	0.08	0.15

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71167-51	SE71167-52	SE71167-53	SE71167-54	SE71167-55
Your Reference	-------------	SP1	SP2	SP3	SP4	QC9
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed (Mercury)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser		
Our Reference:	UNITS	SE71167-56
Your Reference	-------------	QC10
Sample Matrix	------------	Soil
Date Sampled		5/08/2009
Depth		
Date Extracted (Mercury)		10/08/2009
Date Analysed (Mercury)		10/08/2009
Mercury	mg/kg	<0.05

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Subcontracted Analysis						
Our Reference:	UNITS	SE71167-1	SE71167-4	SE71167-10	SE71167-24	SE71167-27
Your Reference	-------------	MP1_0.0-0.2	MP2_0.0-0.2	MP4_0.0-0.2	MP9_0.0-0.2	MP10_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Depth						
Date Extracted		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed		12/08/2009	12/08/2009	12/08/2009	12/08/2009	12/08/2009
Total Sulphur#	%w/w	0.011	0.012	0.016	<0.0050	0.012
SO^4-S^	%w/w as	0.007	0.008	0.010	<0.005	0.007
Total Oxidisable Sulfur TOS#	% w/w	<0.005	<0.005	0.005	<0.005	<0.005

Subcontracted Analysis						
Our Reference:	UNITS	SE71167-29	SE71167-35	SE71167-38	SE71167-41	SE71167-49
Your Reference	-------------	MP11_0.0-0.2	MP13_0.0-0.2	QC8	MP14_0.0-0.2	MPSUMP-1
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		4/08/2009	4/08/2009	4/08/2009	5/08/2009	5/08/2009
Depth						
Date Extracted		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Date Analysed		12/08/2009	12/08/2009	12/08/2009	12/08/2009	12/08/2009
Total Sulphur#	%w/w	0.011	0.010	0.011	0.014	0.16
SO^4-S^	%w/w as	0.008	0.007	0.007	0.011	0.037
Total Oxidisable Sulfur TOS#	% w/w	<0.005	<0.005	<0.005	<0.005	0.1

Subcontracted Analysis			
Our Reference:	UNITS	SE71167-50	SE71167-55
Your Reference	-------------	MPSUMP-2	QC9
Sample Matrix	------------	Soil	Soil
Date Sampled		5/08/2009	5/08/2009
Depth			
Date Extracted		10/08/2009	10/08/2009
Date Analysed		12/08/2009	12/08/2009
Total Sulphur#	%w/w	0.46	0.016
SO^4-S^	%w/w as	0.090	0.012
Total Oxidisable Sulfur TOS#	% w/w	0.4	<0.005

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Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-1 MP1_0.0-0.2 Soil 4/08/2009	SE71167-2 MP1_0.5-0.6 Soil 4/08/2009	SE71167-4 MP2_0.0-0.2 Soil 4/08/2009	SE71167-5 MP2_0.5-0.6 Soil 4/08/2009	SE71167-7 MP3_0.0-0.2 Soil 4/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	13	12	13	12	15

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-8 MP3_0.5-0.6 Soil 4/08/2009	SE71167-10 MP4_0.0-0.2 Soil 4/08/2009	SE71167-11 MP4_0.5-0.6 Soil 4/08/2009	SE71167-13 MP5_0.0-0.2 Soil 4/08/2009	SE71167-14 MP5_0.5-0.6 Soil 4/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	14	12	10	16	18

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-16 MP6_0.0-0.2 Soil 4/08/2009	SE71167-17 MP6_0.5-0.6 Soil 4/08/2009	SE71167-19 MP7_0.0-0.2 Soil 4/08/2009	SE71167-20 MP7_0.5-0.6 Soil 4/08/2009	SE71167-22 MP8_0.0-0.2 Soil 4/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	15	12	12	12	9

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE71167-23 MP8_0.5-0.6 Soil 4/08/2009	SE71167-24 MP9_0.0-0.2 Soil 4/08/2009	SE71167-25 MP9_0.5-0.6 Soil 4/08/2009	SE71167-27 MP10_0.0-0.2 Soil 4/08/2009	SE71167-28 MP10_0.5-0.6 Soil 4/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	9	11	11	13	12

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Moisture Our Reference:	UNITS	SE71167-29	SE71167-30	SE71167-32	SE71167-33	SE71167-35
Your Reference	-------------	MP11_0.0-0.2	MP11_0.5-0.6	MP12_0.0-0.2	MP12_0.5-0.6	MP13_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	11	9	12	14	9

Moisture Our Reference:	UNITS	SE71167-36	SE71167-38	SE71167-41	SE71167-42	SE71167-44
Your Reference	-------------	MP13_0.5-0.6	QC8	MP14_0.0-0.2	MP14_0.5-0.6	MP15_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		4/08/2009	4/08/2009	5/08/2009	5/08/2009	5/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	9	12	10	10	14

Moisture Our Reference:	UNITS	SE71167-45	SE71167-46	SE71167-47	SE71167-49	SE71167-50
Your Reference	-------------	MP15_0.5-0.6	MP16_0.0-0.2	MP16_0.5-0.6	MPSUMP-1	MPSUMP-2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	15	12	13	56	85

Moisture Our Reference:	UNITS	SE71167-51	SE71167-52	SE71167-53	SE71167-54	SE71167-55
Your Reference	-------------	SP1	SP2	SP3	SP4	QC9
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		5/08/2009	5/08/2009	5/08/2009	5/08/2009	5/08/2009
Date Analysed (moisture)		10/08/2009	10/08/2009	10/08/2009	10/08/2009	10/08/2009
Moisture	%	11	6	5	4	8

Moisture		
Our Reference:	UNITS	SE71167-56
Your Reference	-------------	QC10
Sample Matrix	------------	Soil
Date Sampled		5/08/2009
Depth		
Date Analysed (moisture)		10/08/2009
Moisture	%	12

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Method ID	Methodology Summary
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.
AN287	Cyanide (Total or Free) - Total Cyanide is determined by colourimetric method using Discrete Analyser, following distillation of the acidified sample. Free Cyanide is determined by colourimetric method using Discrete Analyser on filtered sample. Complex Cyanide is the difference of Total and Free Cyanide. Based on APHA 21st Edition, 4500-CN C and E.
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.
Ext-002	Analysis subcontracted to SGS Environmental Services Cairns, NATA Accreditation No. 2562, Site No. 3146.
AN150	Sulphite - determined by iodometric titration, based on APHA 21st Edition, 4500-SO3 2-B.
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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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				10/08/09	SE71167-1	10/08/2009 || 10/08/2009	SE71167-4	10/08/09
Date Analysed				10/08/09	SE71167-1	10/08/2009 || 10/08/2009	SE71167-4	10/08/09
HCB	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
gamma-BHC (Lindane)	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
Heptachlor	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	SE71167-4	102%
Aldrin	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	SE71167-4	104%
beta-BHC	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
delta-BHC	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	SE71167-4	97%
Heptachlor Epoxide	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
o,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
alpha-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
trans-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
cis-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
trans-Nonachlor	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
Dieldrin	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	SE71167-4	97%
Endrin	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	SE71167-4	102%
o,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
o,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
beta-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	SE71167-4	108%
Endosulfan Sulphate	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
Methoxychlor	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
Endrin Ketone	mg/kg	0.1	SEO-005	<0.1	SE71167-1	<0.1 || <0.1	[NR]	[NR]
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	0	SEO-005	103	SE71167-1	107 || 104 || RPD: 3	SE71167-4	103%

QUALITY CONTROL Cyanide	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Total Cyanide)				11/8/09	SE71167-1	11/08/2009 || 11/08/2009	SE71167-1	11/8/09
Date Analysed (Total Cyanide)				12/8/09	SE71167-1	12/08/2009 || 12/08/2009	SE71167-1	12/8/09
Total Cyanide	mg/kg	0.1	AN287	<0.1	SE71167-1	0.2 || 0.1 || RPD: 67	SE71167-1	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)				10/08/2009	SE71167-1	10/08/2009 || 10/08/2009	SE71167-2	10/08/2009
Date Analysed (Metals)				10/08/2009	SE71167-1	10/08/2009 || 10/08/2009	SE71167-2	10/08/2009
Arsenic	mg/kg	3	SEM-010	<3	SE71167-1	12 || 11 || RPD: 9	SE71167-2	89%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE71167-1	0.5 || 0.5 || RPD: 0	SE71167-2	89%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE71167-1	26 || 28 || RPD: 7	SE71167-2	96%
Copper	mg/kg	0.5	SEM-010	<0.5	SE71167-1	14 || 14 || RPD: 0	SE71167-2	94%
Lead	mg/kg	1	SEM-010	<1	SE71167-1	120 || 110 || RPD: 9	SE71167-2	90%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE71167-1	14 || 14 || RPD: 0	SE71167-2	89%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE71167-1	160 || 150 || RPD: 6	SE71167-2	120%

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)				10/08/09	SE71167-1	10/08/2009 || 10/08/2009	SE71167-2	10/08/09
Date Analysed (Mercury)				10/08/09	SE71167-1	10/08/2009 || 10/08/2009	SE71167-2	10/08/09
Mercury	mg/kg	0.05	SEM-005	<0.05	SE71167-1	<0.05 || <0.05	SE71167-2	95%

QUALITY CONTROL Subcontracted Analysis	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				10/08/2009	SE71167-1	10/08/2009 || 10/08/2009	LCS	10/08/2009
Date Analysed				12/08/2009	SE71167-1	12/08/2009 || 12/08/2009	LCS	12/08/2009
Total Sulphur#	%w/w	0.005	Ext-002	<0.0050	SE71167-1	0.011 || 0.010 || RPD: 10	LCS	106%

QUALITY CONTROL Subcontracted Analysis	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
SO^4-S^	%w/w as	0.005	Ext-002	<0.005	SE71167-1	0.007 || 0.006 || RPD: 15	LCS	106%
Total Oxidisable Sulfur TOS#	% w/w	0.005	AN150	-	SE71167-1	<0.005 || <0.005	LCS	-

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 OC Pesticides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted		SE71167-41	10/08/2009 || 10/08/2009
Date Analysed		SE71167-41	10/08/2009 || 10/08/2009
HCB	mg/kg	SE71167-41	<0.1 || <0.1
alpha-BHC	mg/kg	SE71167-41	<0.1 || <0.1
gamma-BHC (Lindane)	mg/kg	SE71167-41	<0.1 || <0.1
Heptachlor	mg/kg	SE71167-41	<0.1 || <0.1
Aldrin	mg/kg	SE71167-41	<0.1 || <0.1
beta-BHC	mg/kg	SE71167-41	<0.1 || <0.1
delta-BHC	mg/kg	SE71167-41	<0.1 || <0.1
Heptachlor Epoxide	mg/kg	SE71167-41	<0.1 || <0.1
o,p-DDE	mg/kg	SE71167-41	<0.1 || <0.1
alpha-Endosulfan	mg/kg	SE71167-41	<0.1 || <0.1

QUALITY CONTROL OC Pesticides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
trans-Chlordane	mg/kg	SE71167-41	<0.1 || <0.1
cis-Chlordane	mg/kg	SE71167-41	<0.1 || <0.1
trans-Nonachlor	mg/kg	SE71167-41	<0.1 || <0.1
p,p-DDE	mg/kg	SE71167-41	<0.1 || <0.1
Dieldrin	mg/kg	SE71167-41	<0.1 || <0.1
Endrin	mg/kg	SE71167-41	<0.1 || <0.1
o,p-DDD	mg/kg	SE71167-41	<0.1 || <0.1
o,p-DDT	mg/kg	SE71167-41	<0.1 || <0.1
beta-Endosulfan	mg/kg	SE71167-41	<0.1 || <0.1
p,p-DDD	mg/kg	SE71167-41	<0.1 || <0.1
p,p-DDT	mg/kg	SE71167-41	<0.1 || <0.1
Endosulfan Sulphate	mg/kg	SE71167-41	<0.1 || <0.1
Endrin Aldehyde	mg/kg	SE71167-41	<0.1 || <0.1
Methoxychlor	mg/kg	SE71167-41	<0.1 || <0.1
Endrin Ketone	mg/kg	SE71167-41	<0.1 || <0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	SE71167-41	97 || 97 || RPD: 0

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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)		SE71167-16	10/08/2009 || 10/08/2009	SE71167-30	10/08/2009
Date Analysed (Metals)		SE71167-16	10/08/2009 || 10/08/2009	SE71167-30	10/08/2009
Arsenic	mg/kg	SE71167-16	22 || 23 || RPD: 4	SE71167-30	86%
Cadmium	mg/kg	SE71167-16	1.1 || 0.98 || RPD: 12	SE71167-30	86%
Chromium	mg/kg	SE71167-16	26 || 30 || RPD: 14	SE71167-30	87%
Copper	mg/kg	SE71167-16	17 || 17 || RPD: 0	SE71167-30	92%
Lead	mg/kg	SE71167-16	310 || 290 || RPD: 7	SE71167-30	92%
Nickel	mg/kg	SE71167-16	19 || 22 || RPD: 15	SE71167-30	84%
Zinc	mg/kg	SE71167-16	500 || 510 || RPD: 2	SE71167-30	115%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Mercury)		SE71167-16	10/08/2009 || 10/08/2009	SE71167-30	10/08/09
Date Analysed (Mercury)		SE71167-16	10/08/2009 || 10/08/2009	SE71167-30	10/08/09
Mercury	mg/kg	SE71167-16	<0.05 || <0.05	SE71167-30	109%

QUALITY CONTROL Subcontracted Analysis	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted		SE71167-50	10/08/2009 || 10/08/2009
Date Analysed		SE71167-50	12/08/2009 || 12/08/2009
Total Sulphur#	%w/w	SE71167-50	0.46 || 0.46 || RPD: 0
SO^4-S^	%w/w as	SE71167-50	0.090 || 0.090 || RPD: 0

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QUALITY CONTROL Subcontracted Analysis	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Total Oxidisable Sulfur TOS#	% w/w	SE71167-50	0.4 || 0.4 || RPD: 0

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE71167-29	10/08/2009 || 10/08/2009
Date Analysed (Metals)		SE71167-29	10/08/2009 || 10/08/2009
Arsenic	mg/kg	SE71167-29	40 || 37 || RPD: 8
Cadmium	mg/kg	SE71167-29	0.7 || 0.7 || RPD: 0
Chromium	mg/kg	SE71167-29	30 || 30 || RPD: 0
Copper	mg/kg	SE71167-29	29 || 29 || RPD: 0
Lead	mg/kg	SE71167-29	190 || 150 || RPD: 24
Nickel	mg/kg	SE71167-29	23 || 23 || RPD: 0
Zinc	mg/kg	SE71167-29	330 || 290 || RPD: 13

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE71167-29	10/08/2009 || 10/08/2009
Date Analysed (Mercury)		SE71167-29	10/08/2009 || 10/08/2009
Mercury	mg/kg	SE71167-29	<0.05 || <0.05

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE71167-45	10/08/2009 || 10/08/2009
Date Analysed (Metals)		SE71167-45	10/08/2009 || 10/08/2009
Arsenic	mg/kg	SE71167-45	41 || 43 || RPD: 5
Cadmium	mg/kg	SE71167-45	2.1 || 2.1 || RPD: 0
Chromium	mg/kg	SE71167-45	25 || 25 || RPD: 0
Copper	mg/kg	SE71167-45	23 || 22 || RPD: 4
Lead	mg/kg	SE71167-45	360 || 390 || RPD: 8
Nickel	mg/kg	SE71167-45	20 || 20 || RPD: 0
Zinc	mg/kg	SE71167-45	660 || 670 || RPD: 2

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE71167-45	10/08/2009 || 10/08/2009
Date Analysed (Mercury)		SE71167-45	10/08/2009 || 10/08/2009
Mercury	mg/kg	SE71167-45	<0.05 || <0.05

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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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced: 10/08/09
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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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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ANALYTICAL REPORT

7 August 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Chris Gunton**

Your Reference: EC00233AA

Our Reference: SE71036

Samples: 37 Soils, 2 Waters
Received: 31/7/09

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 Salarmis
Inorganics Signatory

Ly Kim Ha
Organics Signatory

Huong Crawford
Metals Signatory

Inorganics Our Reference:	UNITS	SE71036-1	SE71036-7	SE71036-14	SE71036-16	SE71036-19
Your Reference	-------------	MS1-1_0.0-0.2	MS1-4_0.0-0.2	MS1-7_0.5-0.6	MS1-7_1.4-1.5	MS1-9_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted- (pH 1:5 soil: Water)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (pH 1:5 Soil: Water)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
pH 1:5 soil:water 1:5 soil:water	pH Units	6.6	6.8	6.3	6.7	6.9

Inorganics Our Reference:	UNITS	SE71036-24	SE71036-30	SE71036-34	SE71036-36	SE71036-37
Your Reference	-------------	MS1-11_0.5-0.6	MS1-14_0.0-0.2	MS1-16_0.0-0.2	QC6	QC7
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted- (pH 1:5 soil: Water)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (pH 1:5 Soil: Water)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
pH 1:5 soil:water 1:5 soil:water	pH Units	6.1	6.2	6.1	6.2	7.2

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE71036-1 MS1-1_0.0-0.2 Soil 30/07/2009	SE71036-2 MS1-1_0.5-0.6 Soil 30/07/2009	SE71036-3 MS1-2_0.0-0.2 Soil 30/07/2009	SE71036-4 MS1-2_0.5-0.6 Soil 30/07/2009	SE71036-5 MS1-3_0.0-0.2 Soil 30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Arsenic	mg/kg	7	7	10	9	12
Cadmium	mg/kg	0.4	0.4	0.3	0.3	0.3
Chromium	mg/kg	21	20	22	21	24
Copper	mg/kg	12	23	19	27	9.1
Lead	mg/kg	6	7	4	4	7
Nickel	mg/kg	31	35	39	34	28
Zinc	mg/kg	40	41	40	30	37

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE71036-6 MS1-3_0.5-0.6 Soil 30/07/2009	SE71036-7 MS1-4_0.0-0.2 Soil 30/07/2009	SE71036-8 MS1-4_0.5-0.6 Soil 30/07/2009	SE71036-9 MS1-5_0.0-0.2 Soil 30/07/2009	SE71036-10 MS1-5_0.5-0.6 Soil 30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Arsenic	mg/kg	12	4	<3	4	5
Cadmium	mg/kg	0.3	0.4	0.3	0.3	0.3
Chromium	mg/kg	25	18	21	18	18
Copper	mg/kg	8.1	14	16	13	17
Lead	mg/kg	6	20	12	17	7
Nickel	mg/kg	38	25	23	26	24
Zinc	mg/kg	41	71	47	69	46

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71036-11	SE71036-12	SE71036-13	SE71036-14	SE71036-15
Your Reference	-------------	MS1-6_0.0-0.2	MS1-6_0.5-0.6	MS1-7_0.0-0.2	MS1-7_0.5-0.6	MS1-7_0.9-1.0
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Arsenic	mg/kg	6	9	11	8	11
Cadmium	mg/kg	0.4	0.4	0.9	0.5	0.4
Chromium	mg/kg	17	19	20	18	25
Copper	mg/kg	11	23	14	14	16
Lead	mg/kg	42	27	28	19	12
Nickel	mg/kg	32	57	28	27	30
Zinc	mg/kg	120	84	220	210	80

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71036-16	SE71036-17	SE71036-18	SE71036-19	SE71036-20
Your Reference	-------------	MS1-7_1.4-1.5	MS1-8_0.0-0.2	MS1-8_0.5-0.6	MS1-9_0.0-0.2	MS1-9_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Arsenic	mg/kg	8	9	7	9	7
Cadmium	mg/kg	0.3	0.5	0.4	<0.3	<0.3
Chromium	mg/kg	20	35	29	20	17
Copper	mg/kg	12	15	14	20	19
Lead	mg/kg	6	35	32	7	9
Nickel	mg/kg	33	34	34	34	31
Zinc	mg/kg	55	90	81	52	52

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71036-21	SE71036-22	SE71036-23	SE71036-24	SE71036-25
Your Reference	-------------	MS1-10_0.0-0.2	MS1-10_0.5-0.6	MS1-11_0.0-0.2	MS1-11_0.5-0.6	MS1-11_0.9-1.0
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Arsenic	mg/kg	9	11	10	9	11
Cadmium	mg/kg	0.3	0.4	0.4	0.3	0.5
Chromium	mg/kg	23	23	24	21	31
Copper	mg/kg	56	31	21	20	19
Lead	mg/kg	12	11	20	22	17
Nickel	mg/kg	22	19	32	29	19
Zinc	mg/kg	54	45	80	87	51

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71036-26	SE71036-27	SE71036-28	SE71036-29	SE71036-30
Your Reference	-------------	MS1-12_0.0-0.2	MS1-12_0.5-0.6	MS1-13_0.0-0.2	MS1-13_0.5-0.6	MS1-14_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Arsenic	mg/kg	6	6	6	6	8
Cadmium	mg/kg	0.3	0.3	0.3	<0.3	0.5
Chromium	mg/kg	22	21	20	20	20
Copper	mg/kg	14	15	32	50	15
Lead	mg/kg	9	6	13	13	21
Nickel	mg/kg	26	25	25	25	33
Zinc	mg/kg	55	51	62	51	150

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Metals in Soil by ICP-OES Our Reference:	UNITS	SE71036-31	SE71036-32	SE71036-33	SE71036-34	SE71036-35
Your Reference	-------------	MS1-14_0.5-0.6	MS1-15_0.0-0.2	MS1-15_0.5-0.6	MS1-16_0.0-0.2	MS1-16_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Arsenic	mg/kg	7	6	10	8	7
Cadmium	mg/kg	0.4	<0.3	<0.3	0.4	0.3
Chromium	mg/kg	28	17	22	25	22
Copper	mg/kg	27	21	26	25	22
Lead	mg/kg	15	13	10	11	11
Nickel	mg/kg	19	16	21	27	27
Zinc	mg/kg	62	52	53	60	62

Metals in Soil by ICP-OES Our Reference:	UNITS	SE71036-36	SE71036-37
Your Reference	-------------	QC6	QC7
Sample Matrix	------------	Soil	Soil
Date Sampled		30/07/2009	30/07/2009
Date Extracted (Metals)		3/08/2009	3/08/2009
Date Analysed (Metals)		3/08/2009	3/08/2009
Arsenic	mg/kg	8	6
Cadmium	mg/kg	0.3	0.4
Chromium	mg/kg	18	20
Copper	mg/kg	12	17
Lead	mg/kg	6	15
Nickel	mg/kg	29	25
Zinc	mg/kg	39	91

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Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71036-1	SE71036-2	SE71036-3	SE71036-4	SE71036-5
Your Reference	-------------	MS1-1_0.0-0.2	MS1-1_0.5-0.6	MS1-2_0.0-0.2	MS1-2_0.5-0.6	MS1-3_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71036-6	SE71036-7	SE71036-8	SE71036-9	SE71036-10
Your Reference	-------------	MS1-3_0.5-0.6	MS1-4_0.0-0.2	MS1-4_0.5-0.6	MS1-5_0.0-0.2	MS1-5_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71036-11	SE71036-12	SE71036-13	SE71036-14	SE71036-15
Your Reference	-------------	MS1-6_0.0-0.2	MS1-6_0.5-0.6	MS1-7_0.0-0.2	MS1-7_0.5-0.6	MS1-7_0.9-1.0
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71036-16	SE71036-17	SE71036-18	SE71036-19	SE71036-20
Your Reference	-------------	MS1-7_1.4-1.5	MS1-8_0.0-0.2	MS1-8_0.5-0.6	MS1-9_0.0-0.2	MS1-9_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05	0.05	<0.05	<0.05

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Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71036-21	SE71036-22	SE71036-23	SE71036-24	SE71036-25
Your Reference	-------------	MS1-10_0.0-0.2	MS1-10_0.5-0.6	MS1-11_0.0-0.2	MS1-11_0.5-0.6	MS1-11_0.9-1.0
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71036-26	SE71036-27	SE71036-28	SE71036-29	SE71036-30
Your Reference	-------------	MS1-12_0.0-0.2	MS1-12_0.5-0.6	MS1-13_0.0-0.2	MS1-13_0.5-0.6	MS1-14_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE71036-31	SE71036-32	SE71036-33	SE71036-34	SE71036-35
Your Reference	-------------	MS1-14_0.5-0.6	MS1-15_0.0-0.2	MS1-15_0.5-0.6	MS1-16_0.0-0.2	MS1-16_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser			
Our Reference:	UNITS	SE71036-36	SE71036-37
Your Reference	-------------	QC6	QC7
Sample Matrix	------------	Soil	Soil
Date Sampled		30/07/2009	30/07/2009
Date Extracted (Mercury)		3/08/2009	3/08/2009
Date Analysed (Mercury)		3/08/2009	3/08/2009
Mercury	mg/kg	<0.05	<0.05

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BTEX in Water (µg/L) Our Reference:	UNITS	SE71036-38	SE71036-39
Your Reference	-------------	TB5	TS3
Sample Matrix	------------	Water	Water
Date Sampled		30/07/2009	30/07/2009
Date Extracted (BTEX)		6/08/2009	6/08/2009
Date Analysed (BTEX)		6/08/2009	6/08/2009
Benzene	µg/L	<0.5	230
Toluene	µg/L	<0.5	230
Ethylbenzene	µg/L	<0.5	210
Total Xylenes	µg/L	<1.5	240
Surrogate	%	100	105

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Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE71036-1 MS1-1_0.0-0.2 Soil 30/07/2009	SE71036-2 MS1-1_0.5-0.6 Soil 30/07/2009	SE71036-3 MS1-2_0.0-0.2 Soil 30/07/2009	SE71036-4 MS1-2_0.5-0.6 Soil 30/07/2009	SE71036-5 MS1-3_0.0-0.2 Soil 30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Moisture	%	6	5	9	7	11

Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE71036-6 MS1-3_0.5-0.6 Soil 30/07/2009	SE71036-7 MS1-4_0.0-0.2 Soil 30/07/2009	SE71036-8 MS1-4_0.5-0.6 Soil 30/07/2009	SE71036-9 MS1-5_0.0-0.2 Soil 30/07/2009	SE71036-10 MS1-5_0.5-0.6 Soil 30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Moisture	%	11	8	8	10	6

Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE71036-11 MS1-6_0.0-0.2 Soil 30/07/2009	SE71036-12 MS1-6_0.5-0.6 Soil 30/07/2009	SE71036-13 MS1-7_0.0-0.2 Soil 30/07/2009	SE71036-14 MS1-7_0.5-0.6 Soil 30/07/2009	SE71036-15 MS1-7_0.9-1.0 Soil 30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Moisture	%	5	6	7	3	7

Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE71036-16 MS1-7_1.4-1.5 Soil 30/07/2009	SE71036-17 MS1-8_0.0-0.2 Soil 30/07/2009	SE71036-18 MS1-8_0.5-0.6 Soil 30/07/2009	SE71036-19 MS1-9_0.0-0.2 Soil 30/07/2009	SE71036-20 MS1-9_0.5-0.6 Soil 30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Moisture	%	6	17	15	6	5

Moisture Our Reference:	UNITS	SE71036-21	SE71036-22	SE71036-23	SE71036-24	SE71036-25
Your Reference	-------------	MS1-10_0.0-0.2	MS1-10_0.5-0.6	MS1-11_0.0-0.2	MS1-11_0.5-0.6	MS1-11_0.9-1.0
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Moisture	%	10	8	6	5	12

Moisture Our Reference:	UNITS	SE71036-26	SE71036-27	SE71036-28	SE71036-29	SE71036-30
Your Reference	-------------	MS1-12_0.0-0.2	MS1-12_0.5-0.6	MS1-13_0.0-0.2	MS1-13_0.5-0.6	MS1-14_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Moisture	%	9	7	8	9	9

Moisture Our Reference:	UNITS	SE71036-31	SE71036-32	SE71036-33	SE71036-34	SE71036-35
Your Reference	-------------	MS1-14_0.5-0.6	MS1-15_0.0-0.2	MS1-15_0.5-0.6	MS1-16_0.0-0.2	MS1-16_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009	4/08/2009	4/08/2009	4/08/2009
Moisture	%	12	5	10	12	9

Moisture Our Reference:	UNITS	SE71036-36	SE71036-37
Your Reference	-------------	QC6	QC7
Sample Matrix	------------	Soil	Soil
Date Sampled		30/07/2009	30/07/2009
Date Analysed (moisture)		4/08/2009	4/08/2009
Moisture	%	14	9

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Method ID	Methodology Summary
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
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.
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.
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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QUALITY CONTROL Inorganics	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted- (pH 1:5 soil: Water)				[NT]	SE71036-24	3/08/2009 || 3/08/2009
Date Analysed (pH 1:5 Soil: Water)				[NT]	SE71036-24	3/08/2009 || 3/08/2009
pH 1:5 soil:water 1:5 soil:water	pH Units	0	AN101	[NT]	SE71036-24	6.1 || 6.0 || RPD: 2

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)				3/08/2009	SE71036-1	3/08/2009 || 3/08/2009	SE71036-2	3/08/2009
Date Analysed (Metals)				3/08/2009	SE71036-1	3/08/2009 || 3/08/2009	SE71036-2	3/08/2009
Arsenic	mg/kg	3	SEM-010	<3	SE71036-1	7 || 7 || RPD: 0	SE71036-2	85%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE71036-1	0.4 || <0.3	SE71036-2	82%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE71036-1	21 || 16 || RPD: 27	SE71036-2	85%
Copper	mg/kg	0.5	SEM-010	<0.5	SE71036-1	12 || 12 || RPD: 0	SE71036-2	94%
Lead	mg/kg	1	SEM-010	<1	SE71036-1	6 || 6 || RPD: 0	SE71036-2	75%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE71036-1	31 || 28 || RPD: 10	SE71036-2	86%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE71036-1	40 || 34 || RPD: 16	SE71036-2	90%

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)				3/08/2009	SE71036-1	3/08/2009 || 3/08/2009	SE71036-2	3/08/2009
Date Analysed (Mercury)				3/08/2009	SE71036-1	3/08/2009 || 3/08/2009	SE71036-2	3/08/2009
Mercury	mg/kg	0.05	SEM-005	<0.05	SE71036-1	<0.05 || <0.05	SE71036-2	113%

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)				06/08/09	[NT]	[NT]	LCS	06/08/09
Date Analysed (BTEX)				06/08/09	[NT]	[NT]	LCS	06/08/09
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%
Total Xylenes	µg/L	1.5	SEO-018	<1.5	[NT]	[NT]	LCS	101%
Surrogate	%	0	SEO-018	111	[NT]	[NT]	LCS	79%

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

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)		SE71036-11	3/08/2009 || 3/08/2009	SE71036-22	3/08/2009
Date Analysed (Metals)		SE71036-11	3/08/2009 || 3/08/2009	SE71036-22	3/08/2009
Arsenic	mg/kg	SE71036-11	6 || 6 || RPD: 0	SE71036-22	84%
Cadmium	mg/kg	SE71036-11	0.4 || 0.4 || RPD: 0	SE71036-22	83%
Chromium	mg/kg	SE71036-11	17 || 17 || RPD: 0	SE71036-22	86%
Copper	mg/kg	SE71036-11	11 || 13 || RPD: 17	SE71036-22	91%
Lead	mg/kg	SE71036-11	42 || 46 || RPD: 9	SE71036-22	76%
Nickel	mg/kg	SE71036-11	32 || 30 || RPD: 6	SE71036-22	84%
Zinc	mg/kg	SE71036-11	120 || 150 || RPD: 22	SE71036-22	92%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Mercury)		SE71036-1 1	3/08/2009 || 3/08/2009	SE71036-2 2	3/08/2009
Date Analysed (Mercury)		SE71036-1 1	3/08/2009 || 3/08/2009	SE71036-2 2	3/08/2009
Mercury	mg/kg	SE71036-1 1	<0.05 || <0.05	SE71036-2 2	111%

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE71036-2 1	3/08/2009 || 3/08/2009
Date Analysed (Metals)		SE71036-2 1	3/08/2009 || 3/08/2009
Arsenic	mg/kg	SE71036-2 1	9 || 8 || RPD: 12
Cadmium	mg/kg	SE71036-2 1	0.3 || 0.3 || RPD: 0
Chromium	mg/kg	SE71036-2 1	23 || 23 || RPD: 0
Copper	mg/kg	SE71036-2 1	56 || 45 || RPD: 22
Lead	mg/kg	SE71036-2 1	12 || 12 || RPD: 0
Nickel	mg/kg	SE71036-2 1	22 || 24 || RPD: 9
Zinc	mg/kg	SE71036-2 1	54 || 57 || RPD: 5

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE71036-21	3/08/2009 || 3/08/2009
Date Analysed (Mercury)		SE71036-21	3/08/2009 || 3/08/2009
Mercury	mg/kg	SE71036-21	<0.05 || <0.05

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE71036-31	3/08/2009 || 3/08/2009
Date Analysed (Metals)		SE71036-31	3/08/2009 || 3/08/2009
Arsenic	mg/kg	SE71036-31	7 || 9 || RPD: 25
Cadmium	mg/kg	SE71036-31	0.4 || 0.4 || RPD: 0
Chromium	mg/kg	SE71036-31	28 || 31 || RPD: 10
Copper	mg/kg	SE71036-31	27 || 31 || RPD: 14
Lead	mg/kg	SE71036-31	15 || 20 || RPD: 29
Nickel	mg/kg	SE71036-31	19 || 21 || RPD: 10
Zinc	mg/kg	SE71036-31	62 || 82 || RPD: 28

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QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE71036-31	3/08/2009 || 3/08/2009
Date Analysed (Mercury)		SE71036-31	3/08/2009 || 3/08/2009
Mercury	mg/kg	SE71036-31	<0.05 || <0.05

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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced: 06/08/09
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
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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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ANALYTICAL REPORT

5 August 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Chris Gunton**

Your Reference: EC00233AA

Our Reference: SE70984

Samples: 94 Soils, 7 Waters
Received: 29/07/09

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 Salarmis
Inorganics Signatory

Ly Kim Ha
Organics Signatory

Huong Crawford
Metals Signatory

PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-70 K3_0.0-0.2 Soil 28/07/2009	SE70984-71 K3_0.5-0.6 Soil 28/07/2009	SE70984-73 K2_0.0-0.2 Soil 28/07/2009	SE70984-74 K2_0.5-0.6 Soil 28/07/2009	SE70984-76 K1_0.0-0.2 Soil 28/07/2009
Date Extracted		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
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	%	81	79	83	72	87
2-Fluorobiphenyl	%	83	76	80	78	81
p -Terphenyl-*d14*	%	89	81	83	73	86

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PAHs in Soil Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-7 7 K1_0.5-0.6 Soil 28/07/2009	SE70984-9 7 QC4 Soil 28/07/2009
Date Extracted		31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009
Naphthalene	mg/kg	<0.10	<0.10
2-Methylnaphthalene	mg/kg	<0.10	<0.10
1-Methylnaphthalene	mg/kg	<0.10	<0.10
Acenaphthylene	mg/kg	<0.10	<0.10
Acenaphthene	mg/kg	<0.10	<0.10
Fluorene	mg/kg	<0.10	<0.10
Phenanthrene	mg/kg	<0.10	<0.10
Anthracene	mg/kg	<0.10	<0.10
Fluoranthene	mg/kg	<0.10	<0.10
Pyrene	mg/kg	<0.10	<0.10
Benzo[*a*]anthracene	mg/kg	<0.10	<0.10
Chrysene	mg/kg	<0.10	<0.10
Benzo[*b,k*]fluoranthene	mg/kg	<0.20	<0.20
Benzo[*a*]pyrene	mg/kg	<0.05	<0.05
Indeno[*123-cd*]pyrene	mg/kg	<0.10	<0.10
Dibenzo[*ah*]anthracene	mg/kg	<0.10	<0.10
Benzo[*ghi*]perylene	mg/kg	<0.10	<0.10
Total PAHs (sum)	mg/kg	<1.7	<1.7
Nitrobenzene-d5	%	87	89
2-Fluorobiphenyl	%	87	90
p -Terphenyl-*d14*	%	89	92

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OC Pesticides in Soil Our Reference:	UNITS	SE70984-1	SE70984-7	SE70984-10	SE70984-15	SE70984-17
Your Reference	-------------	OS19_0.0-0.2	OS15_0.0-0.2	RE35_0.0-0.2	RE24_0.0-0.2	RE30_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
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*	%	103	107	93	101	101

OC Pesticides in Soil Our Reference:	UNITS	SE70984-19	SE70984-23	SE70984-24	SE70984-28	SE70984-29
Your Reference	-------------	OS16_0.0-0.2	OS06_0.0-0.2	RE25_0.0-0.2	RE41_0.0-0.2	QC2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
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*	%	98	99	102	107	108

OC Pesticides in Soil Our Reference:	UNITS	SE70984-32	SE70984-34	SE70984-40	SE70984-42	SE70984-46
Your Reference	-------------	RE12_0.0-0.2	OS01_0.0-0.2	RE16_0.0-0.2	RE17_0.0-0.2	RE27_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
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*	%	105	103	105	104	107

OC Pesticides in Soil Our Reference:	UNITS	SE70984-5 2
Your Reference	-------------	RE39_0.0-0 .2
Sample Matrix	------------	Soil
Date Sampled		27/07/2009
Date Extracted		31/07/2009
Date Analysed		31/07/2009
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC (Lindane)	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
Aldrin	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
o,p-DDE	mg/kg	<0.1
alpha-Endosulfan	mg/kg	<0.1
trans-Chlordane	mg/kg	<0.1
cis-Chlordane	mg/kg	<0.1
trans-Nonachlor	mg/kg	<0.1
p,p-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
o,p-DDD	mg/kg	<0.1
o,p-DDT	mg/kg	<0.1
beta-Endosulfan	mg/kg	<0.1
p,p-DDD	mg/kg	<0.1
p,p-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Endrin Ketone	mg/kg	<0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	101

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OP Pesticides in Soil by GCMS						
Our Reference:	UNITS	SE70984-1	SE70984-7	SE70984-10	SE70984-15	SE70984-17
Your Reference	-------------	OS19_0.0-0.2	OS15_0.0-0.2	RE35_0.0-0.2	RE24_0.0-0.2	RE30_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Dichlorvos	mg/kg	<1	<1	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	80	84	92	88	76
d14-p-Terphenyl (Surr)	%	92	92	80	92	84

OP Pesticides in Soil by GCMS Our Reference:	UNITS	SE70984-19	SE70984-23	SE70984-24	SE70984-28	SE70984-29
Your Reference	-------------	OS16_0.0-0.2	OS06_0.0-0.2	RE25_0.0-0.2	RE41_0.0-0.2	QC2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Dichlorvos	mg/kg	<1	<1	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	92	84	92	88	92
d14-p-Terphenyl (Surr)	%	104	92	96	96	96

OP Pesticides in Soil by GCMS Our Reference:	UNITS	SE70984-32	SE70984-34	SE70984-40	SE70984-42	SE70984-46
Your Reference	-------------	RE12_0.0-0.2	OS01_0.0-0.2	RE16_0.0-0.2	RE17_0.0-0.2	RE27_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Date Analysed		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Dichlorvos	mg/kg	<1	<1	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	104	88	92	92	92
d14-p-Terphenyl (Surr)	%	108	92	92	92	96

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OP Pesticides in Soil by GCMS		
Our Reference:	UNITS	SE70984-52
Your Reference	-------------	RE39_0.0-0.2
Sample Matrix	------------	Soil
Date Sampled		27/07/2009
Date Extracted		31/07/2009
Date Analysed		31/07/2009
Dichlorvos	mg/kg	<1
Dimethoate	mg/kg	<1
Diazinon	mg/kg	<0.5
Fenitrothion	mg/kg	<0.2
Malathion	mg/kg	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2
Parathion-ethyl	mg/kg	<0.2
Bromofos-ethyl	mg/kg	<0.2
Methidathion	mg/kg	<0.5
Ethion	mg/kg	<0.2
Azinphos-methyl	mg/kg	<0.20
2-fluorobiphenyl (Surr)	%	80
d14-p-Terphenyl (Surr)	%	84

Inorganics Our Reference:	UNITS	SE70984-70	SE70984-71	SE70984-73	SE70984-74	SE70984-76
Your Reference	-------------	K3_0.0-0.2	K3_0.5-0.6	K2_0.0-0.2	K2_0.5-0.6	K1_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted- (pH 1:5 soil: Water)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
Date Analysed (pH 1:5 Soil: Water)		3/08/2009	3/08/2009	3/08/2009	3/08/2009	3/08/2009
pH 1:5 soil:water 1:5 soil:water	pH Units	7.9	8.0	8.4	8.7	8.2

Inorganics Our Reference:	UNITS	SE70984-77	SE70984-97
Your Reference	-------------	K1_0.5-0.6	QC4
Sample Matrix	------------	Soil	Soil
Date Sampled		28/07/2009	28/07/2009
Date Extracted- (pH 1:5 soil: Water)		3/08/2009	3/08/2009
Date Analysed (pH 1:5 Soil: Water)		3/08/2009	3/08/2009
pH 1:5 soil:water 1:5 soil:water	pH Units	8.6	7.9

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Metals in Soil by ICP-OES						
Our Reference:	UNITS	SE70984-1	SE70984-2	SE70984-4	SE70984-5	SE70984-7
Your Reference	-------------	OS19_0.0-0.2	OS20_0.0-0.2	OS18_0.0-0.2	OS17_0.0-0.2	OS15_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	<3	23	4	3	3
Cadmium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	13	15	12	14	14
Copper	mg/kg	12	12	9.4	9.3	7.5
Lead	mg/kg	9.5	15	8	13	9
Nickel	mg/kg	13	19	17	12	10
Zinc	mg/kg	22	48	20	21	19

Metals in Soil by ICP-OES						
Our Reference:	UNITS	SE70984-9	SE70984-10	SE70984-12	SE70984-13	SE70984-14
Your Reference	-------------	OS14_0.0-0.2	RE35_0.0-0.2	OS13_0.0-0.2	RE31_0.0-0.2	RE32_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	<3	<3	11	5	7
Cadmium	mg/kg	<0.3	<0.3	0.3	0.4	<0.3
Chromium	mg/kg	15	16	20	18	14
Copper	mg/kg	8.6	11	8.2	10	11
Lead	mg/kg	10	12	16	36	24
Nickel	mg/kg	11	11	23	14	15
Zinc	mg/kg	24	38	64	70	60

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-15	SE70984-17	SE70984-18	SE70984-19	SE70984-21
Your Reference	-------------	RE24_0.0-0.2	RE30_0.0-0.2	RE33_0.0-0.2	OS16_0.0-0.2	OS03_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	3	11	5	6	6
Cadmium	mg/kg	<0.3	0.5	<0.3	<0.3	0.4
Chromium	mg/kg	17	16	16	17	25
Copper	mg/kg	3.6	12	11	14	20
Lead	mg/kg	25	99	21	20	7
Nickel	mg/kg	4.3	11	12	14	23
Zinc	mg/kg	31	160	61	65	34

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-22	SE70984-23	SE70984-24	SE70984-26	SE70984-28
Your Reference	-------------	OS04_0.0-0.2	OS06_0.0-0.2	RE25_0.0-0.2	RE29_0.0-0.2	RE41_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	24/07/2009	24/07/2009	24/07/2009	24/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	3	9	3	5	6
Cadmium	mg/kg	0.91	<0.3	<0.3	<0.3	0.3
Chromium	mg/kg	37	21	13	21	18
Copper	mg/kg	8.6	30	12	9.9	15
Lead	mg/kg	11	130	13	14	16
Nickel	mg/kg	15	24	14	19	23
Zinc	mg/kg	36	56	58	56	63

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Metals in Soil by ICP-OES						
Our Reference:	UNITS	SE70984-29	SE70984-32	SE70984-34	SE70984-35	SE70984-37
Your Reference	-------------	QC2	RE12_0.0-0.2	OS01_0.0-0.2	RE07_0.0-0.2	RE08_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	6	4	12	7	7
Cadmium	mg/kg	0.3	0.3	0.3	<0.3	<0.3
Chromium	mg/kg	19	17	18	17	20
Copper	mg/kg	16	16	12	6.3	11
Lead	mg/kg	16	13	26	14	34
Nickel	mg/kg	22	28	21	12	17
Zinc	mg/kg	66	78	84	26	52

Metals in Soil by ICP-OES						
Our Reference:	UNITS	SE70984-39	SE70984-40	SE70984-42	SE70984-43	SE70984-44
Your Reference	-------------	RE11_0.0-0.2	RE16_0.0-0.2	RE17_0.0-0.2	RE23_0.0-0.2	OS12_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	<3	3	<3	<3	<3
Cadmium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	18	17	17	23	14
Copper	mg/kg	7.3	14	15	15	9.8
Lead	mg/kg	6	20	24	54	11
Nickel	mg/kg	9.7	18	16	16	13
Zinc	mg/kg	36	62	52	69	20

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-45	SE70984-46	SE70984-47	SE70984-48	SE70984-50
Your Reference	-------------	OS11_0.0-0.2	RE27_0.0-0.2	RE21_0.0-0.2	RE18_0.0-0.2	OS09_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	<3	<3	<3	10	5
Cadmium	mg/kg	<0.3	<0.3	<0.3	2.1	0.5
Chromium	mg/kg	20	21	14	19	21
Copper	mg/kg	6.4	7.5	8.1	16	14
Lead	mg/kg	13	9.6	12	280	24
Nickel	mg/kg	12	14	8.7	18	23
Zinc	mg/kg	43	48	40	1,100	120

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-52	SE70984-53	SE70984-54	SE70984-55	SE70984-57
Your Reference	-------------	RE39_0.0-0.2	RE40_0.0-0.2	RE38_0.0-0.2	RE37_0.0-0.2	RE36_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	<3	10	<3	8	5
Cadmium	mg/kg	<0.3	0.6	<0.3	<0.3	0.4
Chromium	mg/kg	26	23	19	28	27
Copper	mg/kg	5.7	6.4	1.0	4.4	7.6
Lead	mg/kg	4	11	3	7	10
Nickel	mg/kg	21	12	10	13	13
Zinc	mg/kg	28	69	22	34	43

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-58	SE70984-60	SE70984-63	SE70984-64	SE70984-66
Your Reference	-------------	RE34_0.0-0.2	QC3	OS02_0.0-0.2	RE01_0.0-0.2	RE03_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	130	110	3	8	5
Cadmium	mg/kg	0.5	0.4	<0.3	0.4	<0.3
Chromium	mg/kg	20	20	14	28	18
Copper	mg/kg	40	34	5.5	13	10
Lead	mg/kg	85	76	18	68	30
Nickel	mg/kg	32	28	14	20	17
Zinc	mg/kg	140	130	51	170	65

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-68	SE70984-69	SE70984-79	SE70984-80	SE70984-81
Your Reference	-------------	RE04_0.0-0.2	RE09_0.0-0.2	MS3-1_0.0-0.2	MS3-2_0.0-0.2	MS3-3_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	4	4	1,700	1,600	50
Cadmium	mg/kg	0.4	<0.3	12	11	1.6
Chromium	mg/kg	16	17	21	21	22
Copper	mg/kg	15	11	110	92	34
Lead	mg/kg	20	25	1,600	1,300	230
Nickel	mg/kg	26	11	18	18	20
Zinc	mg/kg	66	60	2,200	2,100	420

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-82	SE70984-83	SE70984-84	SE70984-85	SE70984-86
Your Reference	-------------	MS3-3_0.5-0.6	MS3-4_0.0-0.2	MS3-5_0.0-0.2	MS3-6_0.0-0.2	MS3-7_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	47	120	1,800	1,900	1,500
Cadmium	mg/kg	1.4	2.1	13	13	23
Chromium	mg/kg	21	25	22	23	6.7
Copper	mg/kg	38	42	92	100	100
Lead	mg/kg	220	330	1,700	1,700	1,200
Nickel	mg/kg	19	21	19	20	6.1
Zinc	mg/kg	370	470	2,300	2,300	3,500

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70984-87	SE70984-88	SE70984-89	SE70984-90	SE70984-91
Your Reference	-------------	MS3-8_0.0-0.2	MS3-9_0.0-0.2	MS3-10_0.0-0.2	MS3-11_0.0-0.2	MS3-12_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	2,900	110	100	100	140
Cadmium	mg/kg	47	2.1	2.0	0.7	1.1
Chromium	mg/kg	8.1	24	24	13	20
Copper	mg/kg	260	40	41	33	42
Lead	mg/kg	5,200	280	290	280	350
Nickel	mg/kg	7.4	21	21	14	19
Zinc	mg/kg	4,500	450	450	330	450

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-92 MS3-13_0.0-0.2 Soil 28/07/2009	SE70984-93 MS3-13_0.5-0.6 Soil 28/07/2009	SE70984-94 MS3-14_0.0-0.2 Soil 28/07/2009	SE70984-95 MS3-15_0.0-0.2 Soil 28/07/2009	SE70984-96 MS3-15_0.5-0.6 Soil 28/07/2009
Date Extracted (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Arsenic	mg/kg	130	110	130	110	82
Cadmium	mg/kg	0.9	0.9	0.95	1.9	1.6
Chromium	mg/kg	18	13	17	24	24
Copper	mg/kg	42	38	42	39	36
Lead	mg/kg	340	340	380	290	220
Nickel	mg/kg	17	17	18	21	20
Zinc	mg/kg	410	390	410	450	370

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-98 QC5 Soil 28/07/2009
Date Extracted (Metals)		30/07/2009
Date Analysed (Metals)		30/07/2009
Arsenic	mg/kg	1,700
Cadmium	mg/kg	10
Chromium	mg/kg	20
Copper	mg/kg	110
Lead	mg/kg	1,300
Nickel	mg/kg	17
Zinc	mg/kg	2,000

Mercury Cold Vapor/Hg Analyser Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-1 OS19_0.0-0.2 Soil 24/07/2009	SE70984-2 OS20_0.0-0.2 Soil 24/07/2009	SE70984-4 OS18_0.0-0.2 Soil 24/07/2009	SE70984-5 OS17_0.0-0.2 Soil 24/07/2009	SE70984-7 OS15_0.0-0.2 Soil 24/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-9 OS14_0.0-0.2 Soil 24/07/2009	SE70984-10 RE35_0.0-0.2 Soil 24/07/2009	SE70984-12 OS13_0.0-0.2 Soil 24/07/2009	SE70984-13 RE31_0.0-0.2 Soil 24/07/2009	SE70984-14 RE32_0.0-0.2 Soil 24/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-15 RE24_0.0-0.2 Soil 24/07/2009	SE70984-17 RE30_0.0-0.2 Soil 24/07/2009	SE70984-18 RE33_0.0-0.2 Soil 24/07/2009	SE70984-19 OS16_0.0-0.2 Soil 24/07/2009	SE70984-21 OS03_0.0-0.2 Soil 24/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-22 OS04_0.0-0.2 Soil 24/07/2009	SE70984-23 OS06_0.0-0.2 Soil 24/07/2009	SE70984-24 RE25_0.0-0.2 Soil 24/07/2009	SE70984-26 RE29_0.0-0.2 Soil 24/07/2009	SE70984-28 RE41_0.0-0.2 Soil 24/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-29	SE70984-32	SE70984-34	SE70984-35	SE70984-37
Your Reference	-------------	QC2	RE12_0.0-0.2	OS01_0.0-0.2	RE07_0.0-0.2	RE08_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-39	SE70984-40	SE70984-42	SE70984-43	SE70984-44
Your Reference	-------------	RE11_0.0-0.2	RE16_0.0-0.2	RE17_0.0-0.2	RE23_0.0-0.2	OS12_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-45	SE70984-46	SE70984-47	SE70984-48	SE70984-50
Your Reference	-------------	OS11_0.0-0.2	RE27_0.0-0.2	RE21_0.0-0.2	RE18_0.0-0.2	OS09_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-52	SE70984-53	SE70984-54	SE70984-55	SE70984-57
Your Reference	-------------	RE39_0.0-0.2	RE40_0.0-0.2	RE38_0.0-0.2	RE37_0.0-0.2	RE36_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-58	SE70984-60	SE70984-63	SE70984-64	SE70984-66
Your Reference	-------------	RE34_0.0-0.2	QC3	OS02_0.0-0.2	RE01_0.0-0.2	RE03_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-68	SE70984-69	SE70984-79	SE70984-80	SE70984-81
Your Reference	-------------	RE04_0.0-0.2	RE09_0.0-0.2	MS3-1_0.0-0.2	MS3-2_0.0-0.2	MS3-3_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	0.13	0.09	<0.05

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-82	SE70984-83	SE70984-84	SE70984-85	SE70984-86
Your Reference	-------------	MS3-3_0.5-0.6	MS3-4_0.0-0.2	MS3-5_0.0-0.2	MS3-6_0.0-0.2	MS3-7_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	<0.05	<0.05	0.09	0.11	0.12

Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-87	SE70984-88	SE70984-89	SE70984-90	SE70984-91
Your Reference	-------------	MS3-8_0.0-0.2	MS3-9_0.0-0.2	MS3-10_0.0-0.2	MS3-11_0.0-0.2	MS3-12_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	0.11	<0.05	<0.05	<0.05	0.05

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Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE70984-92	SE70984-93	SE70984-94	SE70984-95	SE70984-96
Your Reference	-------------	MS3-13_0.0-0.2	MS3-13_0.5-0.6	MS3-14_0.0-0.2	MS3-15_0.0-0.2	MS3-15_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009	30/07/2009	30/07/2009
Mercury	mg/kg	0.06	0.07	0.06	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser		
Our Reference:	UNITS	SE70984-98
Your Reference	-------------	QC5
Sample Matrix	------------	Soil
Date Sampled		28/07/2009
Date Extracted (Mercury)		30/07/2009
Date Analysed (Mercury)		30/07/2009
Mercury	mg/kg	0.10

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PAHs in Water Our Reference:	UNITS	SE70984-9 9
Your Reference	-------------	WB4
Sample Matrix	------------	Water
Date Sampled		28/07/2009
Date Extracted		30/07/2009
Date Analysed		30/07/2009
Naphthalene	µg/L	<0.50
2-Methylnaphthalene	µg/L	<0.5
1-Methylnaphthalene	µg/L	<0.5
Acenaphthylene	µg/L	<0.50
Acenaphthene	µg/L	<0.50
Fluorene	µg/L	<0.50
Phenanthrene	µg/L	<0.50
Anthracene	µg/L	<0.50
Fluoranthene	µg/L	<0.50
Pyrene	µg/L	<0.50
Benzo[*a*]anthracene	µg/L	<0.50
Chrysene	µg/L	<0.50
Benzo*[b,k*]fluoranthene	µg/L	<1.0
Benzo[*a*]pyrene	µg/L	<0.50
Indeno[*123-cd*]pyrene	µg/L	<0.50
Dibenzo[*ah*]anthracene	µg/L	<0.50
Benzo[*ghi*]perylene	µg/L	<0.50
Total PAHs	µg/L	<9
Nitrobenzene-d5	%	72
2-Fluorobiphenyl	%	79
p -Terphenyl-*d14*	%	82

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OC Pesticides in Water		
Our Reference:	UNITS	SE70984-30
Your Reference	-------------	WB2
Sample Matrix	------------	Water
Date Sampled		24/07/2009
Date Extracted		30/07/2009
Date Analysed		30/07/2009
HCB	µg/L	<0.2
alpha-BHC	µg/L	<0.2
gamma-BHC(lindane)	µg/L	<0.2
Heptachlor	µg/L	<0.2
Aldrin	µg/L	<0.2
beta-BHC	µg/L	<0.2
delta-BHC	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
o,p-DDE	µg/L	<0.2
alpha-Endosulfan	µg/L	<0.2
trans-Chlordane	µg/L	<0.2
cis-Chlordane	µg/L	<0.2
trans-Nonachlor	µg/L	<0.2
p,p-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
o,p-DDD	µg/L	<0.2
o,p-DDT	µg/L	<0.2
beta-Endosulfan	µg/L	<0.2
p,p-DDD	µg/L	<0.2
p,p-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Endrin Ketone	µg/L	<0.2
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	75

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OP Pesticides in Water by GCMS Our Reference:	UNITS	SE70984-3 0
Your Reference	-------------	WB2
Sample Matrix	------------	Water
Date Sampled		24/07/2009
Date Extracted		30/07/2009
Date Analysed		30/07/2009
Dichlorvos	µg/L	<1
Dimethoate	µg/L	<1
Diazinon	µg/L	<0.5
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.20
Chlorpyrifos-ethyl	µg/L	<0.2
Parathion-ethyl	µg/L	<0.2
Bromofos-ethyl	µg/L	<0.2
Methidathion	µg/L	<0.5
Ethion	µg/L	<0.2
Azinphos-methyl	µg/L	<0.20
2-fluorobiphenyl (Surr)	%	77
d14-p-Terphenyl (Surr)	%	83

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Trace HM (ICP-MS)-Dissolved Our Reference:	UNITS	SE70984-30	SE70984-61	SE70984-99
Your Reference	-------------	WB2	WB3	WB4
Sample Matrix	------------	Water	Water	Water
Date Sampled		24/07/2009	27/07/2009	28/07/2009
Date Extracted (Metals-ICPMS)		30/07/2009	30/07/2009	30/07/2009
Date Analysed (Metals-ICPMS)		30/07/2009	30/07/2009	30/07/2009
Arsenic	µg/L	<1	<1	<1
Cadmium	µg/L	<0.1	<0.1	<0.1
Chromium	µg/L	<1	<1	<1
Copper	µg/L	<1	<1	<1
Lead	µg/L	<1	<1	<1
Nickel	µg/L	<1	<1	<1
Zinc	µg/L	2	<1	<1

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Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70984-30	SE70984-61	SE70984-99
Your Reference	-------------	WB2	WB3	WB4
Sample Matrix	------------	Water	Water	Water
Date Sampled		24/07/2009	27/07/2009	28/07/2009
Date Extracted (Mercury)		30/07/2009	30/07/2009	30/07/2009
Date Analysed (Mercury)		30/07/2009	30/07/2009	30/07/2009
Mercury (Dissolved)	mg/L	<0.0005	<0.0005	<0.0005

Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-1 OS19_0.0-0.2 Soil 24/07/2009	SE70984-2 OS20_0.0-0.2 Soil 24/07/2009	SE70984-4 OS18_0.0-0.2 Soil 24/07/2009	SE70984-5 OS17_0.0-0.2 Soil 24/07/2009	SE70984-7 OS15_0.0-0.2 Soil 24/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	7	13	10	15	19

Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-9 OS14_0.0-0.2 Soil 24/07/2009	SE70984-10 RE35_0.0-0.2 Soil 24/07/2009	SE70984-12 OS13_0.0-0.2 Soil 24/07/2009	SE70984-13 RE31_0.0-0.2 Soil 24/07/2009	SE70984-14 RE32_0.0-0.2 Soil 24/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	13	7	8	14	9

Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-15 RE24_0.0-0.2 Soil 24/07/2009	SE70984-17 RE30_0.0-0.2 Soil 24/07/2009	SE70984-18 RE33_0.0-0.2 Soil 24/07/2009	SE70984-19 OS16_0.0-0.2 Soil 24/07/2009	SE70984-21 OS03_0.0-0.2 Soil 24/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	7	10	12	13	14

Moisture Our Reference: Your Reference Sample Matrix Date Sampled	UNITS ------------- ------------	SE70984-22 OS04_0.0-0.2 Soil 24/07/2009	SE70984-23 OS06_0.0-0.2 Soil 24/07/2009	SE70984-24 RE25_0.0-0.2 Soil 24/07/2009	SE70984-26 RE29_0.0-0.2 Soil 24/07/2009	SE70984-28 RE41_0.0-0.2 Soil 24/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	16	12	20	10	16

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Moisture Our Reference:	UNITS	SE70984-29	SE70984-32	SE70984-34	SE70984-35	SE70984-37
Your Reference	-------------	QC2	RE12_0.0-0.2	OS01_0.0-0.2	RE07_0.0-0.2	RE08_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		24/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	17	14	13	12	7

Moisture Our Reference:	UNITS	SE70984-39	SE70984-40	SE70984-42	SE70984-43	SE70984-44
Your Reference	-------------	RE11_0.0-0.2	RE16_0.0-0.2	RE17_0.0-0.2	RE23_0.0-0.2	OS12_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	9	10	8	10	9

Moisture Our Reference:	UNITS	SE70984-45	SE70984-46	SE70984-47	SE70984-48	SE70984-50
Your Reference	-------------	OS11_0.0-0.2	RE27_0.0-0.2	RE21_0.0-0.2	RE18_0.0-0.2	OS09_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	14	14	14	14	15

Moisture Our Reference:	UNITS	SE70984-52	SE70984-53	SE70984-54	SE70984-55	SE70984-57
Your Reference	-------------	RE39_0.0-0.2	RE40_0.0-0.2	RE38_0.0-0.2	RE37_0.0-0.2	RE36_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	13	17	7	16	20

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Moisture Our Reference:	UNITS	SE70984-58	SE70984-60	SE70984-63	SE70984-64	SE70984-66
Your Reference	-------------	RE34_0.0-0.2	QC3	OS02_0.0-0.2	RE01_0.0-0.2	RE03_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		27/07/2009	27/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	8	8	9	14	15

Moisture Our Reference:	UNITS	SE70984-68	SE70984-69	SE70984-70	SE70984-71	SE70984-73
Your Reference	-------------	RE04_0.0-0.2	RE09_0.0-0.2	K3_0.0-0.2	K3_0.5-0.6	K2_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	11	10	19	19	25

Moisture Our Reference:	UNITS	SE70984-74	SE70984-76	SE70984-77	SE70984-79	SE70984-80
Your Reference	-------------	K2_0.5-0.6	K1_0.0-0.2	K1_0.5-0.6	MS3-1_0.0-0.2	MS3-2_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	12	26	14	17	13

Moisture Our Reference:	UNITS	SE70984-81	SE70984-82	SE70984-83	SE70984-84	SE70984-85
Your Reference	-------------	MS3-3_0.0-0.2	MS3-3_0.5-0.6	MS3-4_0.0-0.2	MS3-5_0.0-0.2	MS3-6_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	11	9	17	14	15

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Moisture Our Reference:	UNITS	SE70984-86	SE70984-87	SE70984-88	SE70984-89	SE70984-90
Your Reference	-------------	MS3-7_0.0-0.2	MS3-8_0.0-0.2	MS3-9_0.0-0.2	MS3-10_0.0-0.2	MS3-11_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	6	8	15	17	13

Moisture Our Reference:	UNITS	SE70984-91	SE70984-92	SE70984-93	SE70984-94	SE70984-95
Your Reference	-------------	MS3-12_0.0-0.2	MS3-13_0.0-0.2	MS3-13_0.5-0.6	MS3-14_0.0-0.2	MS3-15_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009	31/07/2009	31/07/2009
Moisture	%	16	12	14	16	16

Moisture Our Reference:	UNITS	SE70984-96	SE70984-97	SE70984-98
Your Reference	-------------	MS3-15_0.5-0.6	QC4	QC5
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		28/07/2009	28/07/2009	28/07/2009
Date Analysed (moisture)		31/07/2009	31/07/2009	31/07/2009
Moisture	%	13	26	16

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Method ID	Methodology Summary
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.
AN420	Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates, and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD/FID technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN101	pH - Measured using pH meter and electrode based on APHA 21st Edition, 4500-H+. For water analyses the results reported are indicative only as the sample holding time requirement specified in APHA was not met (APHA requires that the pH of the samples are to be measured within 15 minutes after sampling).
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.
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 $\pm$ 5°C.

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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
Date Extracted				31/07/09	SE70984-70	31/07/2009 || 31/07/2009	LCS	31/07/09
Date Analysed				31/07/09	SE70984-70	31/07/2009 || 31/07/2009	LCS	31/07/09
Naphthalene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	LCS	86%
2-Methylnaphthalene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
1-Methylnaphthalene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
Acenaphthylene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	LCS	83%
Acenaphthene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	LCS	102%
Fluorene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
Phenanthrene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	LCS	91%
Anthracene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	LCS	97%
Fluoranthene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	LCS	97%
Pyrene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	LCS	101%
Benzo[*a*]anthracene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
Chrysene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
Benzo[*b,k*]fluoranthene	mg/kg	0.2	SEO-030	<0.20	SE70984-70	<0.20 || <0.20	[NR]	[NR]
Benzo[*a*]pyrene	mg/kg	0.05	SEO-030	<0.05	SE70984-70	<0.05 || <0.05	LCS	89%
Indeno[*123-cd*]pyrene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
Dibenzo[*ah*]anthracene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
Benzo[*ghi*]perylene	mg/kg	0.1	SEO-030	<0.10	SE70984-70	<0.10 || <0.10	[NR]	[NR]
Total PAHs (sum)	mg/kg	1.75	SEO-030	<1.7	SE70984-70	<1.7 || <1.7	[NR]	[NR]
Nitrobenzene-d5	%	0	SEO-030	73	SE70984-70	81 || 79 || RPD: 2	LCS	71%
2-Fluorobiphenyl	%	0	SEO-030	78	SE70984-70	83 || 77 || RPD: 8	LCS	79%
p -Terphenyl-*d* 14	%	0	SEO-030	82	SE70984-70	89 || 82 || RPD: 8	LCS	77%

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				31/07/09	SE70984-1	31/07/2009 || 31/07/2009	SE70984-7	31/07/09
Date Analysed				31/07/09	SE70984-1	31/07/2009 || 31/07/2009	SE70984-7	31/07/09
HCB	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
gamma-BHC (Lindane)	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
Heptachlor	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	SE70984-7	99%
Aldrin	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	SE70984-7	93%
beta-BHC	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
delta-BHC	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	SE70984-7	108%
Heptachlor Epoxide	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
o,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
alpha-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
trans-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
cis-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
trans-Nonachlor	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
Dieldrin	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	SE70984-7	82%
Endrin	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	SE70984-7	101%
o,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
o,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
beta-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	SE70984-7	110%
Endosulfan Sulphate	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
Methoxychlor	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
Endrin Ketone	mg/kg	0.1	SEO-005	<0.1	SE70984-1	<0.1 || <0.1	[NR]	[NR]
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	0	SEO-005	92	SE70984-1	103 || 102 || RPD: 1	SE70984-7	108%

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QUALITY CONTROL OP Pesticides in Soil by GCMS	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				31/07/09	SE70984-32	31/07/2009 || 31/07/2009	SE70984-10	31/07/09
Date Analysed				31/07/09	SE70984-32	31/07/2009 || 31/07/2009	SE70984-10	31/07/09
Dichlorvos	mg/kg	1	AN420	<1	SE70984-32	<1 || <1	SE70984-10	99%
Dimethoate	mg/kg	1	AN420	<1	SE70984-32	<1 || <1	[NR]	[NR]
Diazinon	mg/kg	0.5	AN420	<0.5	SE70984-32	<0.5 || <0.5	SE70984-10	119%
Fenitrothion	mg/kg	0.2	AN420	<0.2	SE70984-32	<0.2 || <0.2	[NR]	[NR]
Malathion	mg/kg	0.2	AN420	<0.20	SE70984-32	<0.20 || <0.20	[NR]	[NR]
Chlorpyrifos-ethyl	mg/kg	0.2	AN420	<0.2	SE70984-32	<0.2 || <0.2	SE70984-10	98%
Parathion-ethyl	mg/kg	0.2	AN420	<0.2	SE70984-32	<0.2 || <0.2	[NR]	[NR]
Bromofos-ethyl	mg/kg	0.2	AN420	<0.2	SE70984-32	<0.2 || <0.2	[NR]	[NR]
Methidathion	mg/kg	0.5	AN420	<0.5	SE70984-32	<0.5 || <0.5	[NR]	[NR]
Ethion	mg/kg	0.2	AN420	<0.2	SE70984-32	<0.2 || <0.2	SE70984-10	109%
Azinphos-methyl	mg/kg	0.2	AN420	<0.20	SE70984-32	<0.20 || <0.20	SE70984-10	104%
2-fluorobiphenyl (Surr)	%	0	AN420	84	SE70984-32	104 || 96 || RPD: 8	SE70984-10	80%
d14-p-Terphenyl (Surr)	%	0	AN420	84	SE70984-32	108 || 100 || RPD: 8	SE70984-10	84%

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QUALITY CONTROL Inorganics	UNITS	LOR	METHOD	Blank
Date Extracted- (pH 1:5 soil: Water)				[NT]
Date Analysed (pH 1:5 Soil: Water)				[NT]
pH 1:5 soil:water 1:5 soil:water	pH Units	0	AN101	[NT]

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)				30/07/2009	SE70984-1	30/07/2009 || 30/07/2009	SE70984-2	30/07/2009
Date Analysed (Metals)				30/07/2009	SE70984-1	30/07/2009 || 30/07/2009	SE70984-2	30/07/2009
Arsenic	mg/kg	3	SEM-010	<3	SE70984-1	<3 || <3	SE70984-2	77%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE70984-1	<0.3 || <0.3	SE70984-2	75%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE70984-1	13 || 12 || RPD: 8	SE70984-2	77%
Copper	mg/kg	0.5	SEM-010	<0.5	SE70984-1	12 || 13 || RPD: 8	SE70984-2	75%
Lead	mg/kg	1	SEM-010	<1	SE70984-1	9.5 || 9.1 || RPD: 4	SE70984-2	76%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE70984-1	13 || 12 || RPD: 8	SE70984-2	78%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE70984-1	22 || 22 || RPD: 0	SE70984-2	78%

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)				30/07/09	SE70984-1	30/07/2009 || 30/07/2009	SE70984-2	30/07/09
Date Analysed (Mercury)				30/07/09	SE70984-1	30/07/2009 || 30/07/2009	SE70984-2	30/07/09
Mercury	mg/kg	0.05	SEM-005	<0.05	SE70984-1	<0.05 || <0.05	SE70984-2	100%

QUALITY CONTROL PAHs in Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				30/07/09	[NT]	[NT]	LCS	30/07/09
Date Analysed				30/07/09	[NT]	[NT]	LCS	30/07/09
Naphthalene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	88%
2-Methylnaphthalene	µg/L	0.5	SEO-030	<0.5	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
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	82%
Acenaphthene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	105%
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	106%
Anthracene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	103%
Fluoranthene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	106%
Pyrene	µg/L	0.5	SEO-030	<0.50	[NT]	[NT]	LCS	110%
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	97%
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	88	[NT]	[NT]	LCS	86%
2-Fluorobiphenyl	%	0	SEO-030	97	[NT]	[NT]	LCS	97%
p -Terphenyl-*d* 14	%	0	SEO-030	103	[NT]	[NT]	LCS	96%

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				30/07/09	[NT]	[NT]	SE70984-1	30/07/09
Date Analysed				30/07/09	[NT]	[NT]	SE70984-1	30/07/09
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]	SE70984-1	94%
Aldrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	SE70984-1	99%
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]	SE70984-1	91%
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]

QUALITY CONTROL OC Pesticides in Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
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]	SE70984-1	93%
Endrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	SE70984-1	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]	SE70984-1	90%
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	89	[NT]	[NT]	SE70984-1	91%

QUALITY CONTROL OP Pesticides in Water by GCMS	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				30/07/09	[NT]	[NT]	LCS	30/07/09
Date Analysed				30/07/09	[NT]	[NT]	LCS	30/07/09
Dichlorvos	µg/L	1	AN420	<1	[NT]	[NT]	LCS	113%
Dimethoate	µg/L	1	AN420	<1	[NT]	[NT]	[NR]	[NR]
Diazinon	µg/L	0.5	AN420	<0.5	[NT]	[NT]	LCS	111%
Fenitrothion	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Malathion	µg/L	0.2	AN420	<0.20	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	LCS	129%
Parathion-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Bromofos-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Methidathion	µg/L	0.5	AN420	<0.5	[NT]	[NT]	[NR]	[NR]
Ethion	µg/L	0.2	AN420	<0.2	[NT]	[NT]	LCS	111%
Azinphos-methyl	µg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	87%
2-fluorobiphenyl (Surr)	%	0	AN420	77	[NT]	[NT]	LCS	83%
d14-p-Terphenyl (Surr)	%	0	AN420	100	[NT]	[NT]	LCS	90%

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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)				30/07/2009	SE70984-30	30/07/2009 || 30/07/2009	SE70984-61	30/07/2009
Date Analysed (Metals-ICPMS)				30/07/2009	SE70984-30	30/07/2009 || 30/07/2009	SE70984-61	30/07/2009
Arsenic	µg/L	1	AN318	<1	SE70984-30	<1 || <1	SE70984-61	98%
Cadmium	µg/L	0.1	AN318	<0.1	SE70984-30	<0.1 || <0.1	SE70984-61	107%
Chromium	µg/L	1	AN318	<1	SE70984-30	<1 || <1	SE70984-61	97%
Copper	µg/L	1	AN318	<1	SE70984-30	<1 || <1	SE70984-61	98%
Lead	µg/L	1	AN318	<1	SE70984-30	<1 || <1	SE70984-61	96%
Nickel	µg/L	1	AN318	<1	SE70984-30	<1 || <1	SE70984-61	97%
Zinc	µg/L	1	AN318	<1	SE70984-30	2 || <1	SE70984-61	101%

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)				30/07/09	[NT]	[NT]	SE70984-1	30/07/09
Date Analysed (Mercury)				30/07/09	[NT]	[NT]	SE70984-1	30/07/09
Mercury (Dissolved)	mg/L	0.0005	SEM-005	<0.0005	[NT]	[NT]	SE70984-1	101%

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

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QUALITY CONTROL OC Pesticides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted		SE70984-32	31/07/2009 || 31/07/2009
Date Analysed		SE70984-32	31/07/2009 || 31/07/2009
HCB	mg/kg	SE70984-32	<0.1 || <0.1
alpha-BHC	mg/kg	SE70984-32	<0.1 || <0.1
gamma-BHC (Lindane)	mg/kg	SE70984-32	<0.1 || <0.1
Heptachlor	mg/kg	SE70984-32	<0.1 || <0.1
Aldrin	mg/kg	SE70984-32	<0.1 || <0.1
beta-BHC	mg/kg	SE70984-32	<0.1 || <0.1
delta-BHC	mg/kg	SE70984-32	<0.1 || <0.1
Heptachlor Epoxide	mg/kg	SE70984-32	<0.1 || <0.1
o,p-DDE	mg/kg	SE70984-32	<0.1 || <0.1
alpha-Endosulfan	mg/kg	SE70984-32	<0.1 || <0.1
trans-Chlordane	mg/kg	SE70984-32	<0.1 || <0.1
cis-Chlordane	mg/kg	SE70984-32	<0.1 || <0.1
trans-Nonachlor	mg/kg	SE70984-32	<0.1 || <0.1
p,p-DDE	mg/kg	SE70984-32	<0.1 || <0.1
Dieldrin	mg/kg	SE70984-32	<0.1 || <0.1
Endrin	mg/kg	SE70984-32	<0.1 || <0.1
o,p-DDD	mg/kg	SE70984-32	<0.1 || <0.1
o,p-DDT	mg/kg	SE70984-32	<0.1 || <0.1
beta-Endosulfan	mg/kg	SE70984-32	<0.1 || <0.1
p,p-DDD	mg/kg	SE70984-32	<0.1 || <0.1

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QUALITY CONTROL OC Pesticides in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
p,p-DDT	mg/kg	SE70984-32	<0.1 || <0.1
Endosulfan Sulphate	mg/kg	SE70984-32	<0.1 || <0.1
Endrin Aldehyde	mg/kg	SE70984-32	<0.1 || <0.1
Methoxychlor	mg/kg	SE70984-32	<0.1 || <0.1
Endrin Ketone	mg/kg	SE70984-32	<0.1 || <0.1
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	SE70984-32	105 || 104 || RPD: 1

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)		SE70984-15	30/07/2009 || 30/07/2009	SE70984-32	30/07/2009
Date Analysed (Metals)		SE70984-15	30/07/2009 || 30/07/2009	SE70984-32	30/07/2009
Arsenic	mg/kg	SE70984-15	3 || 4 || RPD: 29	SE70984-32	88%
Cadmium	mg/kg	SE70984-15	<0.3 || <0.3	SE70984-32	85%
Chromium	mg/kg	SE70984-15	17 || 18 || RPD: 6	SE70984-32	90%
Copper	mg/kg	SE70984-15	3.6 || 3.9 || RPD: 8	SE70984-32	88%
Lead	mg/kg	SE70984-15	25 || 28 || RPD: 11	SE70984-32	81%
Nickel	mg/kg	SE70984-15	4.3 || 4.8 || RPD: 11	SE70984-32	91%
Zinc	mg/kg	SE70984-15	31 || 38 || RPD: 20	SE70984-32	99%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted (Mercury)		SE70984-15	30/07/2009 || 30/07/2009	SE70984-32	30/07/09
Date Analysed (Mercury)		SE70984-15	30/07/2009 || 30/07/2009	SE70984-32	30/07/09
Mercury	mg/kg	SE70984-15	<0.05 || <0.05	SE70984-32	105%

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)		SE70984-29	30/07/2009 || 30/07/2009	SE70984-60	30/07/2009
Date Analysed (Metals)		SE70984-29	30/07/2009 || 30/07/2009	SE70984-60	30/07/2009
Arsenic	mg/kg	SE70984-29	6 || 6 || RPD: 0	SE70984-60	102%
Cadmium	mg/kg	SE70984-29	0.3 || 0.3 || RPD: 0	SE70984-60	80%
Chromium	mg/kg	SE70984-29	19 || 19 || RPD: 0	SE70984-60	83%
Copper	mg/kg	SE70984-29	16 || 16 || RPD: 0	SE70984-60	88%
Lead	mg/kg	SE70984-29	16 || 18 || RPD: 12	SE70984-60	85%
Nickel	mg/kg	SE70984-29	22 || 23 || RPD: 4	SE70984-60	88%
Zinc	mg/kg	SE70984-29	66 || 66 || RPD: 0	SE70984-60	102%

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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)		SE70984-29	30/07/2009 || 30/07/2009	SE70984-60	30/07/09
Date Analysed (Mercury)		SE70984-29	30/07/2009 || 30/07/2009	SE70984-60	30/07/09
Mercury	mg/kg	SE70984-29	<0.05 || <0.05	SE70984-60	110%

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)		SE70984-45	30/07/2009 || 30/07/2009	SE70984-93	30/07/2009
Date Analysed (Metals)		SE70984-45	30/07/2009 || 30/07/2009	SE70984-93	30/07/2009
Arsenic	mg/kg	SE70984-45	<3 || <3	[NR]	[NR]
Cadmium	mg/kg	SE70984-45	<0.3 || <0.3	SE70984-93	83%
Chromium	mg/kg	SE70984-45	20 || 18 || RPD: 11	SE70984-93	79%
Copper	mg/kg	SE70984-45	6.4 || 7.8 || RPD: 20	[NR]	[NR]
Lead	mg/kg	SE70984-45	13 || 12 || RPD: 8	[NR]	[NR]
Nickel	mg/kg	SE70984-45	12 || 12 || RPD: 0	SE70984-93	76%
Zinc	mg/kg	SE70984-45	43 || 43 || RPD: 0	[NR]	[NR]

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QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE70984-45	30/07/2009 || 30/07/2009
Date Analysed (Mercury)		SE70984-45	30/07/2009 || 30/07/2009
Mercury	mg/kg	SE70984-45	<0.05 || <0.05

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)		SE70984-58	30/07/2009 || 30/07/2009	SE70984-1	30/07/2009
Date Analysed (Metals)		SE70984-58	30/07/2009 || 30/07/2009	SE70984-1	30/07/2009
Arsenic	mg/kg	SE70984-58	130 || 120 || RPD: 8	SE70984-1	97%
Cadmium	mg/kg	SE70984-58	0.5 || 0.5 || RPD: 0	[NR]	[NR]
Chromium	mg/kg	SE70984-58	20 || 20 || RPD: 0	[NR]	[NR]
Copper	mg/kg	SE70984-58	40 || 36 || RPD: 11	SE70984-1	96%
Lead	mg/kg	SE70984-58	85 || 90 || RPD: 6	SE70984-1	99%
Nickel	mg/kg	SE70984-58	32 || 32 || RPD: 0	[NR]	[NR]
Zinc	mg/kg	SE70984-58	140 || 150 || RPD: 7	SE70984-1	94%

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE70984-58	30/07/2009 || 30/07/2009
Date Analysed (Mercury)		SE70984-58	30/07/2009 || 30/07/2009
Mercury	mg/kg	SE70984-58	<0.05 || <0.05

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE70984-82	30/07/2009 || 30/07/2009
Date Analysed (Metals)		SE70984-82	30/07/2009 || 30/07/2009
Arsenic	mg/kg	SE70984-82	47 || 45 || RPD: 4
Cadmium	mg/kg	SE70984-82	1.4 || 1.4 || RPD: 0
Chromium	mg/kg	SE70984-82	21 || 22 || RPD: 5
Copper	mg/kg	SE70984-82	38 || 35 || RPD: 8
Lead	mg/kg	SE70984-82	220 || 230 || RPD: 4
Nickel	mg/kg	SE70984-82	19 || 19 || RPD: 0
Zinc	mg/kg	SE70984-82	370 || 380 || RPD: 3

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QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE70984-82	30/07/2009 || 30/07/2009
Date Analysed (Mercury)		SE70984-82	30/07/2009 || 30/07/2009
Mercury	mg/kg	SE70984-82	<0.05 || <0.05

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE70984-92	30/07/2009 || 30/07/2009
Date Analysed (Metals)		SE70984-92	30/07/2009 || 30/07/2009
Arsenic	mg/kg	SE70984-92	130 || 120 || RPD: 8
Cadmium	mg/kg	SE70984-92	0.9 || 0.8 || RPD: 12
Chromium	mg/kg	SE70984-92	18 || 14 || RPD: 25
Copper	mg/kg	SE70984-92	42 || 36 || RPD: 15
Lead	mg/kg	SE70984-92	340 || 400 || RPD: 16
Nickel	mg/kg	SE70984-92	17 || 15 || RPD: 12
Zinc	mg/kg	SE70984-92	410 || 340 || RPD: 19

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QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE70984-92	30/07/2009 || 30/07/2009
Date Analysed (Mercury)		SE70984-92	30/07/2009 || 30/07/2009
Mercury	mg/kg	SE70984-92	0.06 || 0.06 || RPD: 0

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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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced: 31/07/2009
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
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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

ANALYTICAL REPORT

31 July 2009

Coffey Environments Pty Ltd
2/54 Northbourne Avenue
PO Box 1986
CANBERRA
ACT 2602

Attention: **Chris Gunton**

Your Reference: EC00233AA

Our Reference: SE70874

Samples: 22 Soils, 3 Waters
Received: 24/7/09

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:

Ly Kim Ha
Organics Signatory

Huong Crawford
Metals Signatory

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OC Pesticides in Soil Our Reference:	UNITS	SE70874-1	SE70874-4	SE70874-8	SE70874-11	SE70874-16
Your Reference	-------------	RE02_0.0-0.2	RE10_0.0-0.2	RE15_0.0-0.2	RE20_0.0-0.2	RE28_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled Depth		23/07/2009 0.0-0.2	23/07/2009 0.0-0.2	23/07/2009 0.0-0.2	23/07/2009 0.0-0.2	23/07/2009 0.0-0.2
Date Extracted		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
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*	%	97	98	96	99	99

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OC Pesticides in Soil				
Our Reference:	UNITS	SE70874-18	SE70874-21	SE70874-22
Your Reference	-------------	OS05_0.0-0.2	OS10_0.0-0.2	QC1
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.0-0.2	-
Date Extracted		28/07/2009	28/07/2009	28/07/2009
Date Analysed		28/07/2009	28/07/2009	28/07/2009
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*	%	102	110	98

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OP Pesticides in Soil by GCMS Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE70874-1 RE02_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-4 RE10_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-8 RE15_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-11 RE20_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-16 RE28_0.0-0.2 Soil 23/07/2009 0.0-0.2
Date Extracted		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Date Analysed		28/07/2009	28/07/2009	28/07/2009	28/07/2009	28/07/2009
Dichlorvos	mg/kg	<1	<1	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	100	100	104	100	108
d14-p-Terphenyl (Surr)	%	96	96	100	96	100

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OP Pesticides in Soil by GCMS				
Our Reference:	UNITS	SE70874-18	SE70874-21	SE70874-22
Your Reference	-------------	OS05_0.0-0.2	OS10_0.0-0.2	QC1
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.0-0.2	-
Date Extracted		28/07/2009	28/07/2009	28/07/2009
Date Analysed		28/07/2009	28/07/2009	28/07/2009
Dichlorvos	mg/kg	<1	<1	<1
Dimethoate	mg/kg	<1	<1	<1
Diazinon	mg/kg	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	<0.2	<0.2	<0.2
Malathion	mg/kg	<0.20	<0.20	<0.20
Chlorpyrifos-ethyl	mg/kg	<0.2	<0.2	<0.2
Parathion-ethyl	mg/kg	<0.2	<0.2	<0.2
Bromofos-ethyl	mg/kg	<0.2	<0.2	<0.2
Methidathion	mg/kg	<0.5	<0.5	<0.5
Ethion	mg/kg	<0.2	<0.2	<0.2
Azinphos-methyl	mg/kg	<0.20	<0.20	<0.20
2-fluorobiphenyl (Surr)	%	108	104	104
d14-p-Terphenyl (Surr)	%	104	100	92

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Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE70874-1 RE02_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-2 RE05_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-3 RE06_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-4 RE10_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-5 RE13_0.0-0.2 Soil 23/07/2009 0.0-0.2
Date Extracted (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Arsenic	mg/kg	6	6	8	5	7
Cadmium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	16	19	18	15	19
Copper	mg/kg	29	19	15	5.5	21
Lead	mg/kg	6	8	7	6	11
Nickel	mg/kg	18	22	20	13	22
Zinc	mg/kg	24	38	31	17	62

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE70874-6 RE14_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-7 RE14_0.5-0.6 Soil 23/07/2009 0.5-0.6	SE70874-8 RE15_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-9 RE19_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-10 RE19_0.5-0.6 Soil 23/07/2009 0.5-0.6
Date Extracted (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Arsenic	mg/kg	6	7	8	4	4
Cadmium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	18	19	18	17	18
Copper	mg/kg	16	18	38	19	19
Lead	mg/kg	14	15	4	8	7
Nickel	mg/kg	20	21	20	18	19
Zinc	mg/kg	59	60	24	37	35

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70874-11	SE70874-12	SE70874-13	SE70874-14	SE70874-15
Your Reference	-------------	RE20_0.0-0.2	RE20_0.5-0.6	RE22_0.0-0.2	RE26_0.0-0.2	RE26_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.5-0.6	0.0-0.2	0.0-0.2	0.5-0.6
Date Extracted (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Arsenic	mg/kg	7	4	3	3	3
Cadmium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	18	19	17	16	16
Copper	mg/kg	18	20	7.9	6.2	6.5
Lead	mg/kg	10	11	5	6	6
Nickel	mg/kg	27	28	17	12	12
Zinc	mg/kg	60	61	27	19	17

Metals in Soil by ICP-OES Our Reference:	UNITS	SE70874-16	SE70874-17	SE70874-18	SE70874-19	SE70874-20
Your Reference	-------------	RE28_0.0-0.2	RE28_0.5-0.6	OS05_0.0-0.2	OS07_0.0-0.2	OS08_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.5-0.6	0.0-0.2	0.0-0.2	0.0-0.2
Date Extracted (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Metals)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Arsenic	mg/kg	10	9	5	<3	<3
Cadmium	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	16	21	9.6	17	18
Copper	mg/kg	9.7	11	12	11	11
Lead	mg/kg	8	11	6	4	5
Nickel	mg/kg	20	25	16	18	21
Zinc	mg/kg	41	46	18	29	35

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Metals in Soil by ICP-OES			
Our Reference:	UNITS	SE70874-21	SE70874-22
Your Reference	-------------	OS10_0.0-0.2	QC1
Sample Matrix	------------	Soil	Soil
Date Sampled		23/07/2009	23/07/2009
Depth		0.0-0.2	-
Date Extracted (Metals)		27/07/2009	27/07/2009
Date Analysed (Metals)		27/07/2009	27/07/2009
Arsenic	mg/kg	6	5
Cadmium	mg/kg	<0.3	<0.3
Chromium	mg/kg	15	17
Copper	mg/kg	8.8	5.8
Lead	mg/kg	5	6
Nickel	mg/kg	19	13
Zinc	mg/kg	30	18

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Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE70874-1	SE70874-2	SE70874-3	SE70874-4	SE70874-5
Your Reference	-------------	RE02_0.0-0.2	RE05_0.0-0.2	RE06_0.0-0.2	RE10_0.0-0.2	RE13_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2
Date Extracted (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE70874-6	SE70874-7	SE70874-8	SE70874-9	SE70874-10
Your Reference	-------------	RE14_0.0-0.2	RE14_0.5-0.6	RE15_0.0-0.2	RE19_0.0-0.2	RE19_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.5-0.6	0.0-0.2	0.0-0.2	0.5-0.6
Date Extracted (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE70874-11	SE70874-12	SE70874-13	SE70874-14	SE70874-15
Your Reference	-------------	RE20_0.0-0.2	RE20_0.5-0.6	RE22_0.0-0.2	RE26_0.0-0.2	RE26_0.5-0.6
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.5-0.6	0.0-0.2	0.0-0.2	0.5-0.6
Date Extracted (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE70874-16	SE70874-17	SE70874-18	SE70874-19	SE70874-20
Your Reference	-------------	RE28_0.0-0.2	RE28_0.5-0.6	OS05_0.0-0.2	OS07_0.0-0.2	OS08_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		23/07/2009	23/07/2009	23/07/2009	23/07/2009	23/07/2009
Depth		0.0-0.2	0.5-0.6	0.0-0.2	0.0-0.2	0.0-0.2
Date Extracted (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Date Analysed (Mercury)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser			
Our Reference:	UNITS	SE70874-21	SE70874-22
Your Reference	-------------	OS10_0.0-0.2	QC1
Sample Matrix	------------	Soil	Soil
Date Sampled		23/07/2009	23/07/2009
Depth		0.0-0.2	-
Date Extracted (Mercury)		27/07/2009	27/07/2009
Date Analysed (Mercury)		27/07/2009	27/07/2009
Mercury	mg/kg	<0.05	<0.05

BTEX in Water (µg/L) Our Reference:	UNITS	SE70874-23	SE70874-25
Your Reference	-------------	TB1	TS1
Sample Matrix	------------	Water	Water
Date Sampled		23/07/2009	23/07/2009
Depth		-	-
Date Extracted (BTEX)		28/07/2009	28/07/2009
Date Analysed (BTEX)		29/07/2009	29/07/2009
Benzene	µg/L	<0.5	250
Toluene	µg/L	<0.5	250
Ethylbenzene	µg/L	<0.5	240
Total Xylenes	µg/L	<1.5	230
Surrogate	%	65	122

OC Pesticides in Water		
Our Reference:	UNITS	SE70874-24
Your Reference	-------------	WB1
Sample Matrix	------------	Water
Date Sampled		23/07/2009
Depth		-
Date Extracted		28/07/2009
Date Analysed		28/07/2009
HCB	µg/L	<0.2
alpha-BHC	µg/L	<0.2
gamma-BHC(lindane)	µg/L	<0.2
Heptachlor	µg/L	<0.2
Aldrin	µg/L	<0.2
beta-BHC	µg/L	<0.2
delta-BHC	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
o,p-DDE	µg/L	<0.2
alpha-Endosulfan	µg/L	<0.2
trans-Chlordane	µg/L	<0.2
cis-Chlordane	µg/L	<0.2
trans-Nonachlor	µg/L	<0.2
p,p-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
o,p-DDD	µg/L	<0.2
o,p-DDT	µg/L	<0.2
beta-Endosulfan	µg/L	<0.2
p,p-DDD	µg/L	<0.2
p,p-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Endrin Ketone	µg/L	<0.2
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	71

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OP Pesticides in Water by GCMS Our Reference:	UNITS	SE70874-2 4
Your Reference	-------------	WB1
Sample Matrix	------------	Water
Date Sampled		23/07/2009
Depth		-
Date Extracted		28/07/2009
Date Analysed		28/07/2009
Dichlorvos	µg/L	<1
Dimethoate	µg/L	<1
Diazinon	µg/L	<0.5
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.20
Chlorpyrifos-ethyl	µg/L	<0.2
Parathion-ethyl	µg/L	<0.2
Bromofos-ethyl	µg/L	<0.2
Methidathion	µg/L	<0.5
Ethion	µg/L	<0.2
Azinphos-methyl	µg/L	<0.20
2-fluorobiphenyl (Surr)	%	92
d14-p-Terphenyl (Surr)	%	92

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Trace HM (ICP-MS)-Dissolved Our Reference:	UNITS	SE70874-24
Your Reference	-------------	WB1
Sample Matrix	------------	Water
Date Sampled		23/07/2009
Depth		-
Date Extracted (Metals-ICPMS)		28/07/2009
Date Analysed (Metals-ICPMS)		28/07/2009
Arsenic	µg/L	<1
Cadmium	µg/L	<0.1
Chromium	µg/L	<1
Copper	µg/L	<1
Lead	µg/L	<1
Nickel	µg/L	<1
Zinc	µg/L	<1

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Mercury Cold Vapor/Hg Analyser Our Reference:	UNITS	SE70874-24
Your Reference	-------------	WB1
Sample Matrix	------------	Water
Date Sampled		23/07/2009
Depth		-
Date Extracted (Mercury)		24/07/2009
Date Analysed (Mercury)		24/07/2009
Mercury (Dissolved)	mg/L	<0.0005

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Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE70874-1 RE02_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-2 RE05_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-3 RE06_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-4 RE10_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-5 RE13_0.0-0.2 Soil 23/07/2009 0.0-0.2
Date Analysed (moisture)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Moisture	%	14	10	12	9	8

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE70874-6 RE14_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-7 RE14_0.5-0.6 Soil 23/07/2009 0.5-0.6	SE70874-8 RE15_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-9 RE19_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-10 RE19_0.5-0.6 Soil 23/07/2009 0.5-0.6
Date Analysed (moisture)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Moisture	%	11	11	14	19	14

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE70874-11 RE20_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-12 RE20_0.5-0.6 Soil 23/07/2009 0.5-0.6	SE70874-13 RE22_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-14 RE26_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-15 RE26_0.5-0.6 Soil 23/07/2009 0.5-0.6
Date Analysed (moisture)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Moisture	%	7	6	12	16	10

Moisture Our Reference: Your Reference Sample Matrix Date Sampled Depth	UNITS ------------- ------------	SE70874-16 RE28_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-17 RE28_0.5-0.6 Soil 23/07/2009 0.5-0.6	SE70874-18 OS05_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-19 OS07_0.0-0.2 Soil 23/07/2009 0.0-0.2	SE70874-20 OS08_0.0-0.2 Soil 23/07/2009 0.0-0.2
Date Analysed (moisture)		27/07/2009	27/07/2009	27/07/2009	27/07/2009	27/07/2009
Moisture	%	13	19	9.9	9	10

Moisture Our Reference:	UNITS	SE70874-21	SE70874-22
Your Reference	-------------	OS10_0.0-0.2	QC1
Sample Matrix	------------	Soil	Soil
Date Sampled		23/07/2009	23/07/2009
Depth		0.0-0.2	-
Date Analysed (moisture)		27/07/2009	27/07/2009
Moisture	%	15	10

Method ID	Methodology Summary
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.
AN420	Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates, and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD/FID technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
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.
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.
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.

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				28/07/09	SE70874-1	28/07/2009 || 28/07/2009	SE70874-4	28/07/09
Date Analysed				28/07/09	SE70874-1	28/07/2009 || 28/07/2009	SE70874-4	28/07/09
HCB	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
gamma-BHC (Lindane)	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
Heptachlor	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	SE70874-4	107%
Aldrin	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	SE70874-4	111%
beta-BHC	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
delta-BHC	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	SE70874-4	104%
Heptachlor Epoxide	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
o,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
alpha-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
trans-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
cis-Chlordane	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
trans-Nonachlor	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDE	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
Dieldrin	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	SE70874-4	107%
Endrin	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	SE70874-4	116%
o,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
o,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
beta-Endosulfan	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDD	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
p,p-DDT	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	SE70874-4	117%
Endosulfan Sulphate	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
Methoxychlor	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
Endrin Ketone	mg/kg	0.1	SEO-005	<0.1	SE70874-1	<0.1 || <0.1	[NR]	[NR]
2,4,5,6-Tetrachloro-m-xylene *(Surrogate*	%	0	SEO-005	98	SE70874-1	97 || 97 || RPD: 0	SE70874-4	99%

QUALITY CONTROL OP Pesticides in Soil by GCMS	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				28/07/09	SE70874-1	28/07/2009 || 28/07/2009	SE70874-8	28/07/09
Date Analysed				28/07/09	SE70874-1	28/07/2009 || 28/07/2009	SE70874-8	28/07/09
Dichlorvos	mg/kg	1	AN420	<1	SE70874-1	<1 || <1	SE70874-8	112%
Dimethoate	mg/kg	1	AN420	<1	SE70874-1	<1 || <1	[NR]	[NR]
Diazinon	mg/kg	0.5	AN420	<0.5	SE70874-1	<0.5 || <0.5	SE70874-8	104%
Fenitrothion	mg/kg	0.2	AN420	<0.2	SE70874-1	<0.2 || <0.2	[NR]	[NR]
Malathion	mg/kg	0.2	AN420	<0.20	SE70874-1	<0.20 || <0.20	[NR]	[NR]
Chlorpyrifos-ethyl	mg/kg	0.2	AN420	<0.2	SE70874-1	<0.2 || <0.2	SE70874-8	125%
Parathion-ethyl	mg/kg	0.2	AN420	<0.2	SE70874-1	<0.2 || <0.2	[NR]	[NR]
Bromofos-ethyl	mg/kg	0.2	AN420	<0.2	SE70874-1	<0.2 || <0.2	[NR]	[NR]
Methidathion	mg/kg	0.5	AN420	<0.5	SE70874-1	<0.5 || <0.5	[NR]	[NR]
Ethion	mg/kg	0.2	AN420	<0.2	SE70874-1	<0.2 || <0.2	SE70874-8	118%
Azinphos-methyl	mg/kg	0.2	AN420	<0.20	SE70874-1	<0.20 || <0.20	SE70874-8	124%
2-fluorobiphenyl (Surr)	%	0	AN420	96	SE70874-1	100 || 100 || RPD: 0	SE70874-8	108%
d14-p-Terphenyl (Surr)	%	0	AN420	92	SE70874-1	96 || 92 || RPD: 4	SE70874-8	100%

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)				27/07/2009	SE70874-1	27/07/2009 || 27/07/2009	SE70874-2	27/07/2009
Date Analysed (Metals)				27/07/2009	SE70874-1	27/07/2009 || 27/07/2009	SE70874-2	27/07/2009
Arsenic	mg/kg	3	SEM-010	<3	SE70874-1	6 || 6 || RPD: 0	SE70874-2	89%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE70874-1	<0.3 || <0.3	SE70874-2	84%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE70874-1	16 || 17 || RPD: 6	SE70874-2	87%
Copper	mg/kg	0.5	SEM-010	<0.5	SE70874-1	29 || 23 || RPD: 23	SE70874-2	97%
Lead	mg/kg	1	SEM-010	<1	SE70874-1	6 || 5 || RPD: 18	SE70874-2	78%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE70874-1	18 || 17 || RPD: 6	SE70874-2	85%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE70874-1	24 || 25 || RPD: 4	SE70874-2	92%

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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)				27/07/2009	SE70874-1	27/07/2009 || 27/07/2009	SE70874-2	27/07/2009
Date Analysed (Mercury)				27/07/2009	SE70874-1	27/07/2009 || 27/07/2009	SE70874-2	27/07/2009
Mercury	mg/kg	0.05	SEM-005	<0.05	SE70874-1	<0.05 || <0.05	SE70874-2	108%

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)				28/07/09	[NT]	[NT]	LCS	28/07/09
Date Analysed (BTEX)				29/07/09	[NT]	[NT]	LCS	29/07/09
Benzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	105%
Toluene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	106%
Ethylbenzene	µg/L	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	106%
Total Xylenes	µg/L	1.5	SEO-018	<1.5	[NT]	[NT]	LCS	104%
Surrogate	%	0	SEO-018	95	[NT]	[NT]	LCS	82%

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				28/07/09	[NT]	[NT]	LCS	28/07/09
Date Analysed				28/07/09	[NT]	[NT]	LCS	28/07/09
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	94%
Aldrin	µg/L	0.2	SEO-005	<0.2	[NT]	[NT]	LCS	99%
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	91%
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]

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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
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	93%
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	90%
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	89	[NT]	[NT]	LCS	91%

QUALITY CONTROL OP Pesticides in Water by GCMS	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Date Extracted				28/07/09	[NT]	[NT]	LCS	28/07/09
Date Analysed				28/07/09	[NT]	[NT]	LCS	28/07/09
Dichlorvos	µg/L	1	AN420	<1	[NT]	[NT]	LCS	81%
Dimethoate	µg/L	1	AN420	<1	[NT]	[NT]	[NR]	[NR]
Diazinon	µg/L	0.5	AN420	<0.5	[NT]	[NT]	LCS	101%
Fenitrothion	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Malathion	µg/L	0.2	AN420	<0.20	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	LCS	110%
Parathion-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Bromofos-ethyl	µg/L	0.2	AN420	<0.2	[NT]	[NT]	[NR]	[NR]
Methidathion	µg/L	0.5	AN420	<0.5	[NT]	[NT]	[NR]	[NR]
Ethion	µg/L	0.2	AN420	<0.2	[NT]	[NT]	LCS	119%
Azinphos-methyl	µg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	96%
2-fluorobiphenyl (Surr)	%	0	AN420	70	[NT]	[NT]	LCS	110%
d14-p-Terphenyl (Surr)	%	0	AN420	65	[NT]	[NT]	LCS	95%

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)				28/07/2009	[NT]	[NT]	SE70874-1	28/07/2009
Date Analysed (Metals-ICPMS)				28/07/2009	[NT]	[NT]	SE70874-1	28/07/2009
Arsenic	µg/L	1	AN318	<1	[NT]	[NT]	SE70874-1	101%
Cadmium	µg/L	0.1	AN318	<0.1	[NT]	[NT]	SE70874-1	105%
Chromium	µg/L	1	AN318	<1	[NT]	[NT]	SE70874-1	97%
Copper	µg/L	1	AN318	<1	[NT]	[NT]	SE70874-1	105%
Lead	µg/L	1	AN318	<1	[NT]	[NT]	SE70874-1	99%
Nickel	µg/L	1	AN318	<1	[NT]	[NT]	SE70874-1	106%
Zinc	µg/L	1	AN318	<1	[NT]	[NT]	SE70874-1	112%

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)				24/07/2009	[NT]	[NT]	SE70874-1	24/07/2009
Date Analysed (Mercury)				24/07/2009	[NT]	[NT]	SE70874-1	24/07/2009
Mercury (Dissolved)	mg/L	0.0005	SEM-005	<0.0005	[NT]	[NT]	SE70874-1	114%

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

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE70874-11	27/07/2009 || 27/07/2009
Date Analysed (Metals)		SE70874-11	27/07/2009 || 27/07/2009
Arsenic	mg/kg	SE70874-11	7 || 4 || RPD: 55
Cadmium	mg/kg	SE70874-11	<0.3 || <0.3
Chromium	mg/kg	SE70874-11	18 || 18 || RPD: 0

QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Copper	mg/kg	SE70874-11	18 || 19 || RPD: 5
Lead	mg/kg	SE70874-11	10 || 9.6 || RPD: 4
Nickel	mg/kg	SE70874-11	27 || 26 || RPD: 4
Zinc	mg/kg	SE70874-11	60 || 57 || RPD: 5

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE70874-11	27/07/2009 || 27/07/2009
Date Analysed (Mercury)		SE70874-11	27/07/2009 || 27/07/2009
Mercury	mg/kg	SE70874-11	<0.05 || <0.05

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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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced: 28/07/09
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
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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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ANALYTICAL REPORT

1 December 2009

Coffey Environments Pty Ltd
17 Torrens St
BRADDON
ACT 2612

Attention: **Julian Howard**

Your Reference: EC00233AA

Our Reference: SE74004

Samples: 37 Soils, 1 Water
Received: 26/11/2009

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:

Huong Crawford
Metals Signatory

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Metals in Soil by ICP-OES Our Reference:	UNITS	SE74004-1	SE74004-3	SE74004-6	SE74004-8	SE74004-10
Your Reference	-------------	MS3-16_0.0-0.2	MS3-18_0.0-0.2	MS3-21_0.0-0.2	MS3-23_0.0-0.2	MS3-25_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Extracted (Metals)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Date Analysed (Metals)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Arsenic	mg/kg	32	40	39	27	23
Cadmium	mg/kg	0.3	0.4	0.4	<0.3	<0.3
Chromium	mg/kg	16	18	18	17	16
Copper	mg/kg	26	28	28	22	21
Lead	mg/kg	100	120	120	72	75
Nickel	mg/kg	12	15	14	16	15
Zinc	mg/kg	100	120	120	110	100

Metals in Soil by ICP-OES Our Reference:	UNITS	SE74004-12	SE74004-13	SE74004-15	SE74004-17	SE74004-20
Your Reference	-------------	MS3-27_0.0-0.2	MS3-28_0.0-0.2	MS3-30_0.0-0.2	MS3-32_0.0-0.2	MS3-34_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Extracted (Metals)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Date Analysed (Metals)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Arsenic	mg/kg	22	27	28	30	29
Cadmium	mg/kg	<0.3	<0.3	0.3	1.1	0.8
Chromium	mg/kg	16	19	18	18	18
Copper	mg/kg	19	23	23	28	30
Lead	mg/kg	60	75	88	160	150
Nickel	mg/kg	14	17	17	16	15
Zinc	mg/kg	100	120	110	290	250

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Metals in Soil by ICP-OES Our Reference:	UNITS	SE74004-22	SE74004-25	SE74004-27	SE74004-29	SE74004-31
Your Reference	-------------	MS3-35_0.0-0.2	MS4-41_0.0-0.2	MS4-43_0.0-0.2	MS4-45_0.0-0.2	MS4-47_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Extracted (Metals)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Date Analysed (Metals)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Arsenic	mg/kg	35	6	8	8	4
Cadmium	mg/kg	1.0	1.1	<0.3	1.3	<0.3
Chromium	mg/kg	19	15	17	17	14
Copper	mg/kg	33	7.7	5.7	9.6	5.3
Lead	mg/kg	190	71	23	67	18
Nickel	mg/kg	16	12	14	14	10
Zinc	mg/kg	300	1,200	65	1,500	53

Metals in Soil by ICP-OES Our Reference:	UNITS	SE74004-33	SE74004-35	SE74004-36
Your Reference	-------------	MS4-49_0.0-0.2	MS4-51_0.0-0.2	QC100
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009
Date Extracted (Metals)		27/11/2009	27/11/2009	27/11/2009
Date Analysed (Metals)		27/11/2009	27/11/2009	27/11/2009
Arsenic	mg/kg	9	5	38
Cadmium	mg/kg	<0.3	<0.3	0.4
Chromium	mg/kg	16	14	19
Copper	mg/kg	6.9	4.9	27
Lead	mg/kg	23	20	130
Nickel	mg/kg	14	10	14
Zinc	mg/kg	69	48	140

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE74004-1	SE74004-3	SE74004-6	SE74004-8	SE74004-10
Your Reference	-------------	MS3-16_0.0-0.2	MS3-18_0.0-0.2	MS3-21_0.0-0.2	MS3-23_0.0-0.2	MS3-25_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Extracted (Mercury)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Date Analysed (Mercury)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE74004-12	SE74004-13	SE74004-15	SE74004-17	SE74004-20
Your Reference	-------------	MS3-27_0.0-0.2	MS3-28_0.0-0.2	MS3-30_0.0-0.2	MS3-32_0.0-0.2	MS3-34_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Extracted (Mercury)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Date Analysed (Mercury)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	SE74004-22	SE74004-25	SE74004-27	SE74004-29	SE74004-31
Your Reference	-------------	MS3-35_0.0-0.2	MS4-41_0.0-0.2	MS4-43_0.0-0.2	MS4-45_0.0-0.2	MS4-47_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Extracted (Mercury)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Date Analysed (Mercury)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Mercury	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury Cold Vapor/Hg Analyser				
Our Reference:	UNITS	SE74004-33	SE74004-35	SE74004-36
Your Reference	-------------	MS4-49_0.0-0.2	MS4-51_0.0-0.2	QC100
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009
Date Extracted (Mercury)		27/11/2009	27/11/2009	27/11/2009
Date Analysed (Mercury)		27/11/2009	27/11/2009	27/11/2009
Mercury	mg/kg	<0.05	<0.05	<0.05

Moisture Our Reference:	UNITS	SE74004-1	SE74004-3	SE74004-6	SE74004-8	SE74004-10
Your Reference	-------------	MS3-16_0.0-0.2	MS3-18_0.0-0.2	MS3-21_0.0-0.2	MS3-23_0.0-0.2	MS3-25_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Analysed (moisture)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Moisture	%	<1	2	1	1	1

Moisture Our Reference:	UNITS	SE74004-12	SE74004-13	SE74004-15	SE74004-17	SE74004-20
Your Reference	-------------	MS3-27_0.0-0.2	MS3-28_0.0-0.2	MS3-30_0.0-0.2	MS3-32_0.0-0.2	MS3-34_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Analysed (moisture)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Moisture	%	1	2	1	2	3

Moisture Our Reference:	UNITS	SE74004-22	SE74004-25	SE74004-27	SE74004-29	SE74004-31
Your Reference	-------------	MS3-35_0.0-0.2	MS4-41_0.0-0.2	MS4-43_0.0-0.2	MS4-45_0.0-0.2	MS4-47_0.0-0.2
Sample Matrix	------------	Soil	Soil	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009	25/11/2009	25/11/2009
Date Analysed (moisture)		27/11/2009	27/11/2009	27/11/2009	27/11/2009	27/11/2009
Moisture	%	3	2	2	1	<1

Moisture Our Reference:	UNITS	SE74004-33	SE74004-35	SE74004-36
Your Reference	-------------	MS4-49_0.0-0.2	MS4-51_0.0-0.2	QC100
Sample Matrix	------------	Soil	Soil	Soil
Date Sampled		25/11/2009	25/11/2009	25/11/2009
Date Analysed (moisture)		27/11/2009	27/11/2009	27/11/2009
Moisture	%	1	1	<1

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Method ID	Methodology Summary
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.
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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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)				27/11/2009	SE74004-1	27/11/2009 || 27/11/2009	SE74004-3	27/11/2009
Date Analysed (Metals)				27/11/2009	SE74004-1	27/11/2009 || 27/11/2009	SE74004-3	27/11/2009
Arsenic	mg/kg	3	SEM-010	<3	SE74004-1	32 || 32 || RPD: 0	SE74004-3	98%
Cadmium	mg/kg	0.3	SEM-010	<0.3	SE74004-1	0.3 || 0.3 || RPD: 0	SE74004-3	71%
Chromium	mg/kg	0.3	SEM-010	<0.3	SE74004-1	16 || 15 || RPD: 6	SE74004-3	79%
Copper	mg/kg	0.5	SEM-010	<0.5	SE74004-1	26 || 20 || RPD: 26	SE74004-3	92%
Lead	mg/kg	1	SEM-010	<1	SE74004-1	100 || 99 || RPD: 1	SE74004-3	108%
Nickel	mg/kg	0.5	SEM-010	<0.5	SE74004-1	12 || 11 || RPD: 9	SE74004-3	74%
Zinc	mg/kg	0.5	SEM-010	<0.5	SE74004-1	100 || 95 || RPD: 5	SE74004-3	128%

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)				27/11/2009	SE74004-1	27/11/2009 || 27/11/2009	SE74004-3	27/11/2009
Date Analysed (Mercury)				27/11/2009	SE74004-1	27/11/2009 || 27/11/2009	SE74004-3	27/11/2009
Mercury	mg/kg	0.05	SEM-005	<0.05	SE74004-1	<0.05 || <0.05	SE74004-3	96%

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 Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Metals)		SE74004-22	27/11/2009 || 27/11/2009
Date Analysed (Metals)		SE74004-22	27/11/2009 || 27/11/2009

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QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Arsenic	mg/kg	SE74004-22	35 || 34 || RPD: 3
Cadmium	mg/kg	SE74004-22	1.0 || 1.0 || RPD: 0
Chromium	mg/kg	SE74004-22	19 || 18 || RPD: 5
Copper	mg/kg	SE74004-22	33 || 31 || RPD: 6
Lead	mg/kg	SE74004-22	190 || 190 || RPD: 0
Nickel	mg/kg	SE74004-22	16 || 16 || RPD: 0
Zinc	mg/kg	SE74004-22	300 || 310 || RPD: 3

QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date Extracted (Mercury)		SE74004-22	27/11/2009 || 27/11/2009
Date Analysed (Mercury)		SE74004-22	27/11/2009 || 27/11/2009
Mercury	mg/kg	SE74004-22	<0.05 || <0.05

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

Samples analysed as received. Solid samples expressed on a dry weight basis.
Date Organics extraction commenced:
NATA Corporate Accreditation No. 2562, Site No 4354
Note: Test results are not corrected for recovery (excluding Dioxins/Furans*)
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Quality Control Protocol

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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.
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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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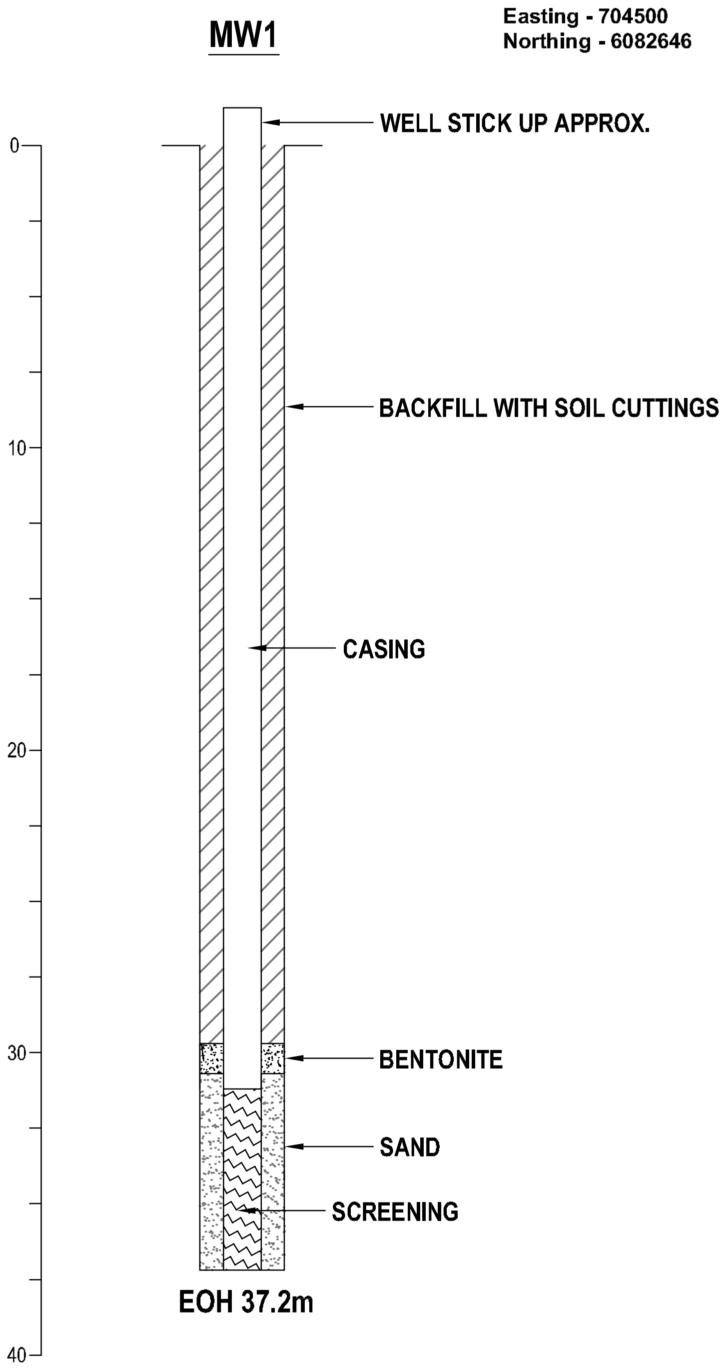
Appendix C
Groundwater Well Construction Details, Hand Auger Logs and Field PID Results

Stage 3 Contamination Assessment, Jumping Creek Queanbeyan, NSW

A4



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES
2/54 Northbourne Avenue
Canberra ACT 2601
Ph: (02) 6248 7154
Fax: (02) 6248 7157

Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

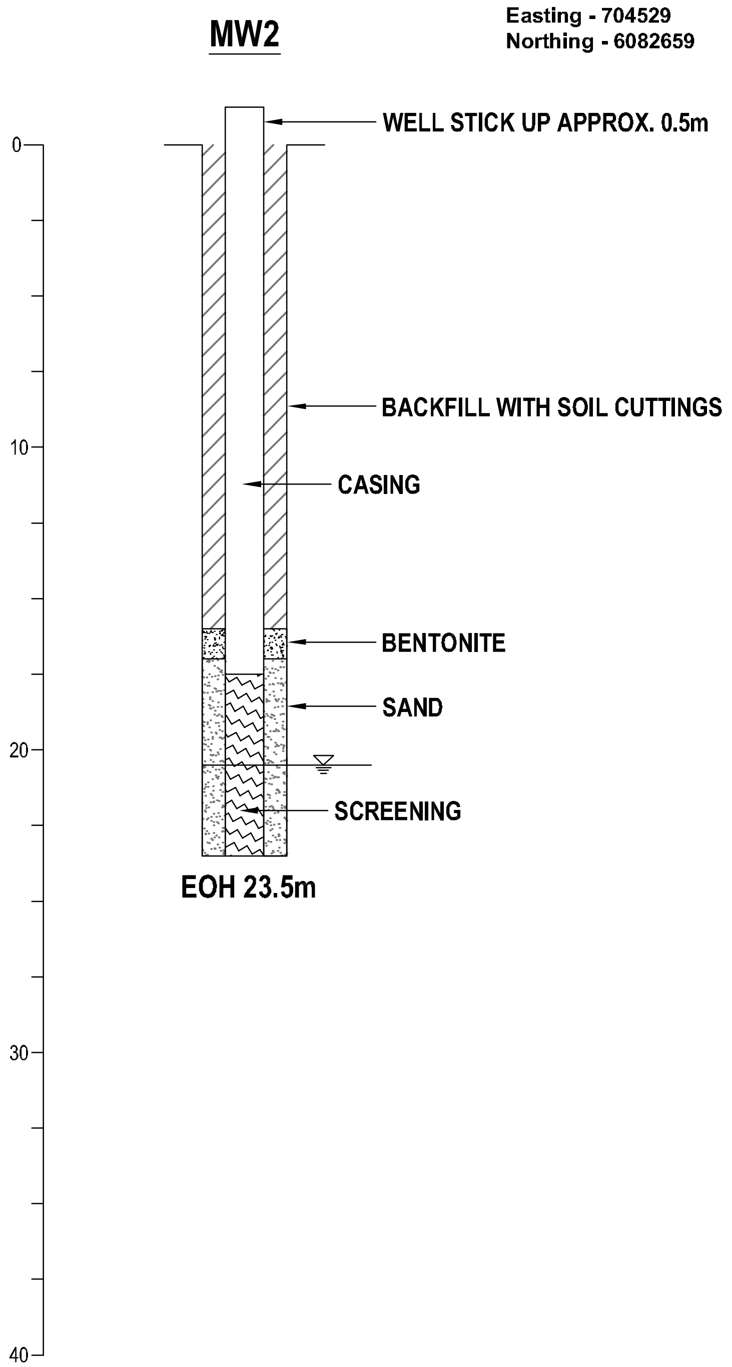
Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

Drawing Title: **UPGRADIENT OF MINE SITE 3 MW1**

Drawn	Date		
MV	22.04.10		
Project - Drawing No.		Figure No.	Rev.
ENVICANB00233AA-DO3		1	A

A4



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

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Fax: (02) 6248 7157

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

Drawing Title: **MINE SITE 3 MW2**

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

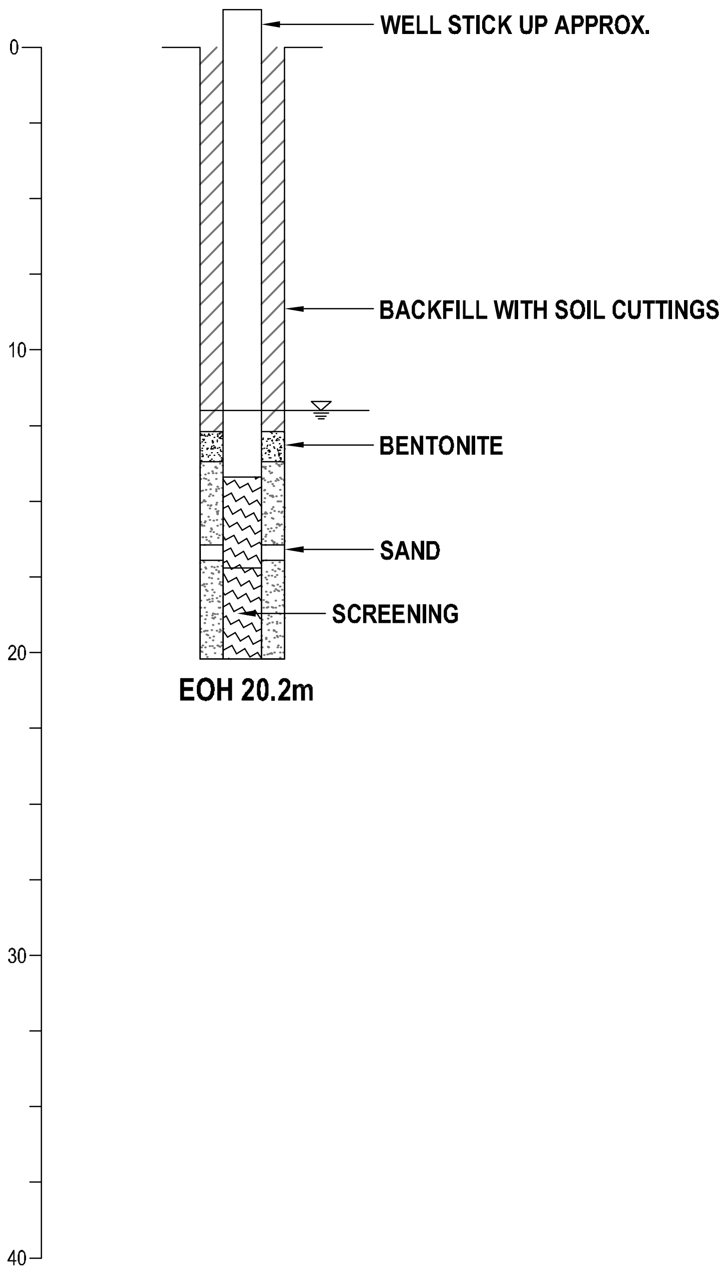
Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Drawn	Date	Project - Drawing No.	Figure No.	Rev.
MV	22.04.10	ENVICANB00233AA-DO3	1	A

A4

MW3

Easting - 704532
Northing - 6082726



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES
2/54 Northbourne Avenue
Canberra ACT 2601
Ph: (02) 6248 7154
Fax: (02) 6248 7157

Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

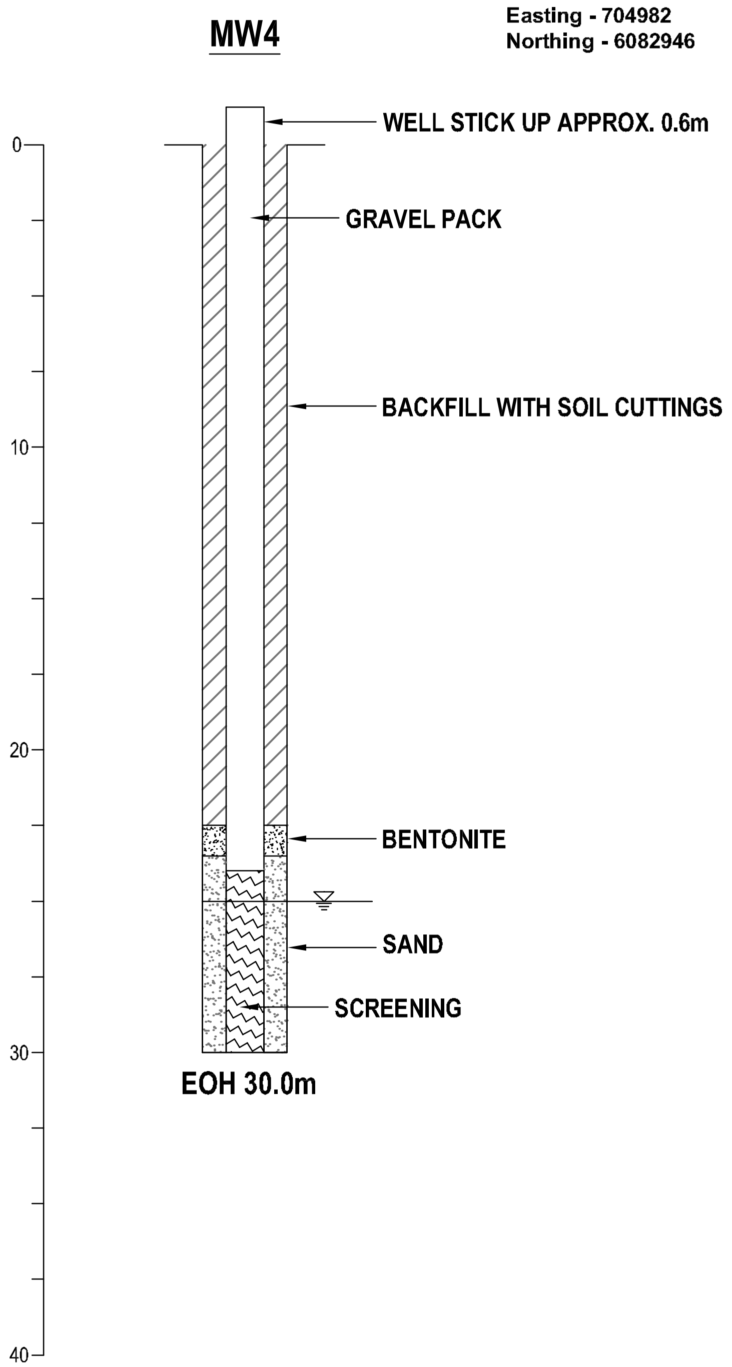
Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

Drawing Title: **MINE SITE 3 MW3**

Drawn	Date	Project - Drawing No.	Figure No.	Rev.
MV	22.04.10	ENVICANB00233AA-DO3	1	A

A4



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

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Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

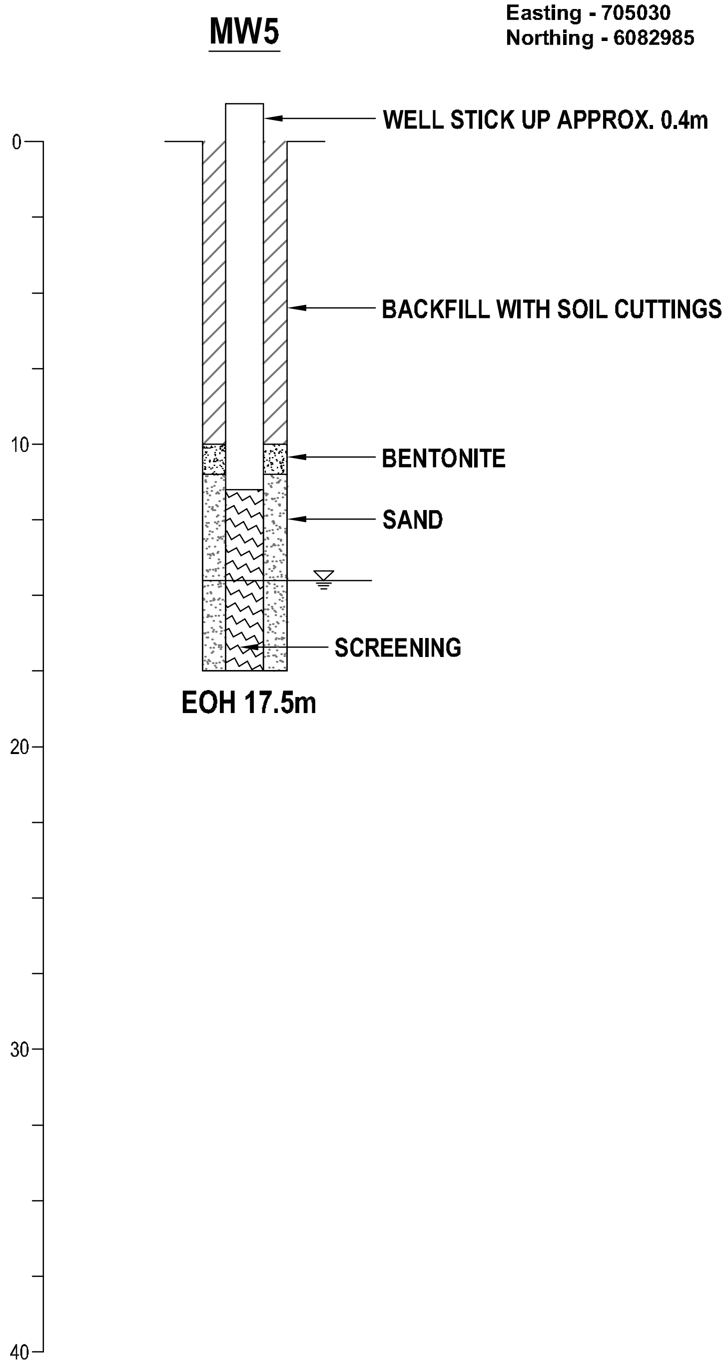
Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

Drawing Title: **MINE SITE 4 MW4**

Drawn	Date		
MV	22.04.10		
Project - Drawing No.		Figure No.	Rev.
ENVICANB00233AA-DO3		1	A

A4



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES
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Ph: (02) 6248 7154
Fax: (02) 6248 7157

Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

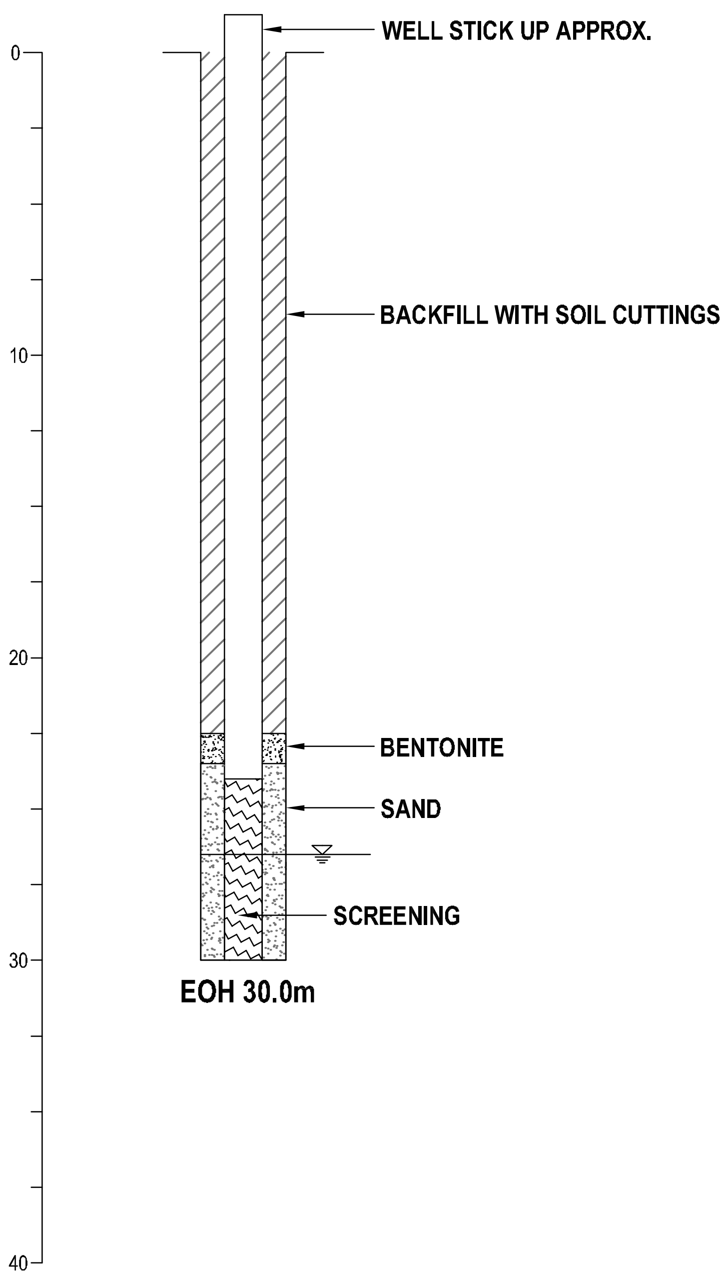
Drawing Title: **MINE SITE 4 MW5**

Drawn	Date		
MV	22.04.10		
Project - Drawing No.		Figure No.	Rev.
ENVICANB00233AA-DO3		1	A

A4

MW6

Easting - 705008
Northing - 6083032



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

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Fax: (02) 6248 7157

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

Drawing Title: **MINE SITE 4 MW4**

Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

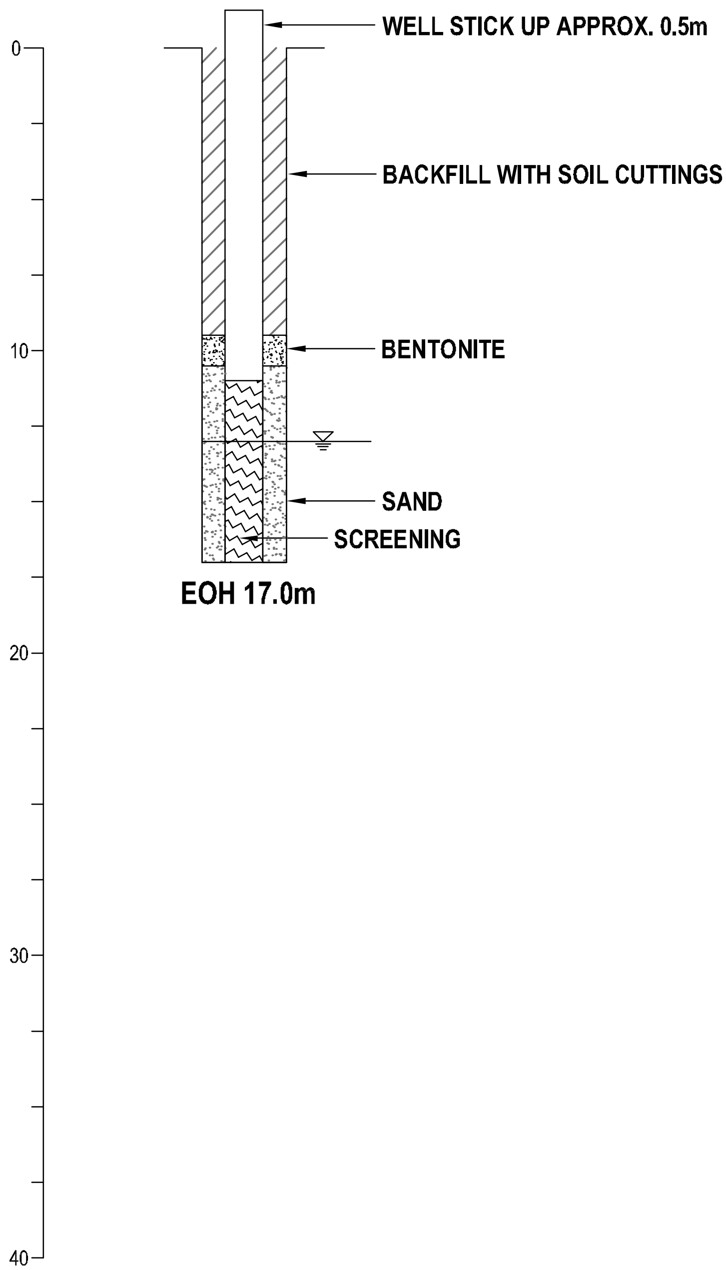
Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Drawn	Date	Project - Drawing No.	Figure No.	Rev.
MV	22.04.10	ENVICANB00233AA-DO3	1	A

A4

MW7

Easting - 704919
Northing - 6083124



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

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Ph: (02) 6248 7154
Fax: (02) 6248 7157

Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

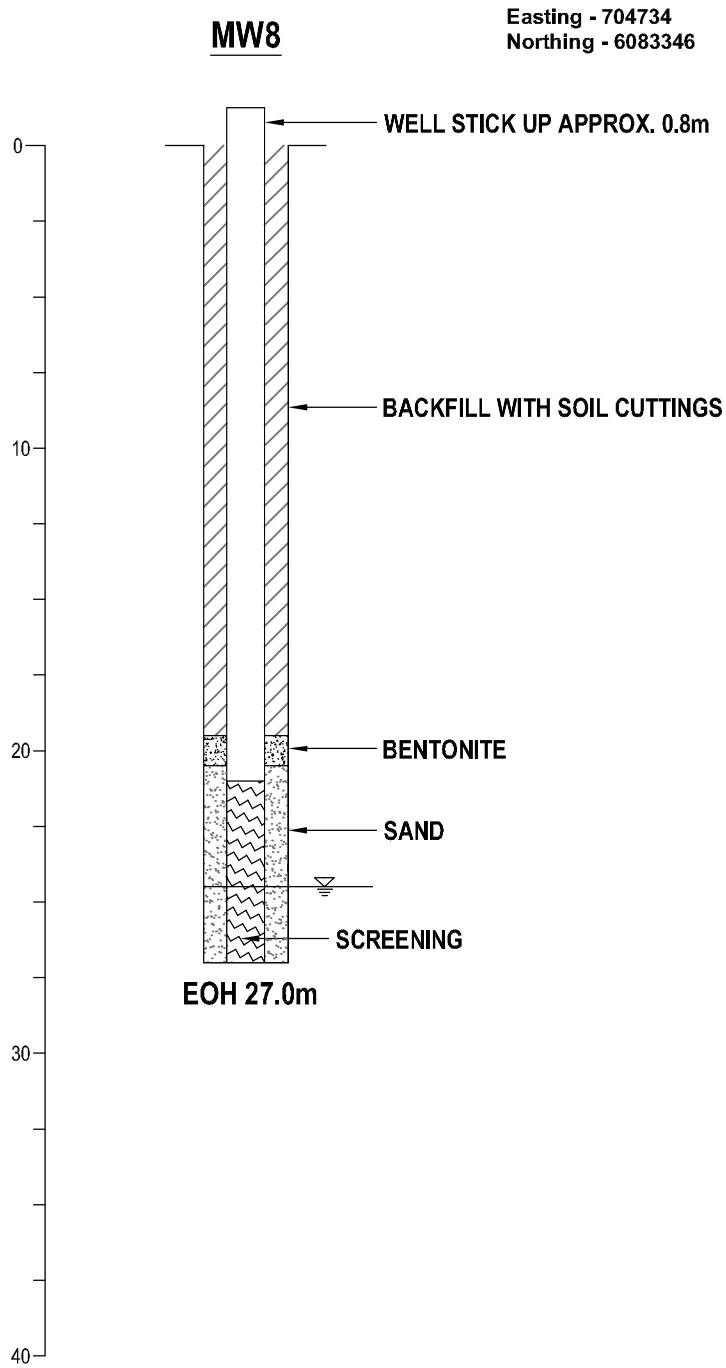
Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

Drawing Title: **ADJACENT TO MINERAL PROCESSING ARE MW7**

Drawn	Date		
MV	22.04.10		
Project - Drawing No.		Figure No.	Rev.
ENVICANB00233AA-DO3		1	A

A4



Drilled to 1m with hollow stem auger then to 27.2m with Air hammer. Sample recovered as fine sandy clay, inferred to be shale as identified on the geological map of the area.

coffey environments
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Canberra ACT 2601
Ph: (02) 6248 7154
Fax: (02) 6248 7157

Rev	Date	Revision Details	Drn
A	22.04.10	STAGE 3 CA	MV

Client: CANBERRA INVESTMENT CORPORATION LTD

Project: JUMPING CREEK STAGE 3 CONTAMINATION ASSESSMENT

Location: JUMPING CREEK QUEANBEYAN, NEW SOUTH WALES

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 (A4)

Drawing Title: **ADJACENT OF SHEEP DIP ARE MW8**

Drawn	Date		
MV	22.04.10		
Project - Drawing No.		Figure No.	Rev.
ENVICANB00233AA-DO3		1	A

coffey environments

Borehole

Borehole No.	*OS01*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*27.7.2009*
Principal:		Date completed:	*27.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704401	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083594	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
HA				OS01				GS	**Gravelly SAND** brown/red, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole OS01 terminated at 0.3m				
						0.5							

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration** 1 2 3 4	no resistance ranging to refusal	D	disturbed sample		F	firm
W	washbore			N	standard penetration test (SPT)	**moisture**	St	stiff
CT	cable tool			N*	SPT - sample recovered	D dry	VSt	very stiff
HA	hand auger	**water**		Nc	SPT with solid cone	M moist	H	hard
DT	diatube	10/1/98 water level on date shown		V	vane shear (kPa)	W wet	Fb	friable
B	blank bit			P	pressuremeter	Wp plastic limit	VL	very loose
V	V bit	water inflow		Bs	bulk sample	W_L liquid limit	L	loose
T	TC bit	water outflow		E	environmental sample		MD	medium dense
*bit shown by suffix				R	refusal		D	dense
e.g.	ADT						VD	very dense

coffey environments

Borehole

Borehole No. **OS02**

Sheet 1 of 1

Office Job No.: **ENVICANB00233AA**

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*28.7.2009*
Principal:		Date completed:	*28.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704597	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083619	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS02				SG	**Sandy GRAVEL** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole OS02 terminated at 0.3m				
						0.5							

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

Form GEO 5.3 Issue 3 Rev.2

BOREHOLE ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

coffey environments

Borehole

Borehole No.	*OS03*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting: 704821	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing 6083565	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS03				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole OS03 terminated at 0.2m				

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

Borehole

Borehole No.	*OS04*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704930	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	6083551	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA								GS	**Gravelly SAND**: brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
				OS04									
									Borehole OS04 terminated at 0.2m				

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

Borehole

		Borehole No.	***OS05***
		Sheet	1 of 1
		Office Job No.:	***ENVICANB00233AA***
Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***23.7.2009***
Principal:		Date completed:	***23.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	705282	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083518	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS05				GSM	**Gravelly Sandy SILT**brown, no plasticity clay, firm, fine to medium grained sand, traces of fine to medium gravel	D			Some shrub roots present
									Borehole OS05 terminated at 0.2m				

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration** 1 2 3 4		D	disturbed sample		F	firm
W	washbore	no resistance ranging to refusal		N	standard penetration test (SPT)		St	stiff
CT	cable tool			N*	SPT - sample recovered	**moisture**	VSt	very stiff
HA	hand auger	**water**		Nc	SPT with solid cone	D dry	H	hard
DT	diatube	10/1/98 water level on date shown		V	vane shear (kPa)	M moist	Fb	friable
B	blank bit			P	pressuremeter	W wet	VL	very loose
V	V bit	water inflow		Bs	bulk sample	Wp plastic limit	L	loose
T	TC bit	water outflow		E	environmental sample	W_L liquid limit	MD	medium dense
*bit shown by suffix				R	refusal		D	dense
e.g.	ADT						VD	very dense

coffey environments

Borehole

Borehole No.	*OS06*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704841	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083456	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS06				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine gravel	M			
									Borehole OS06 terminated at 0.2m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

Form GEO 5.3 Issue 3 Rev.2

coffey environments

Borehole

Borehole No.	OS07
Sheet	1 of 1
Office Job No.:	ENVICANB00233AA
Client:	Canberra Investment Corporation Pty Ltd
Principal:	
Project:	Jumping Creek
Borehole Location:	Open Space or Residential Areas
Date started:	23.7.2009
Date completed:	23.7.2009
Logged by:	CL
Checked by:	JH

drill model and mounting:	Hand Auger	Easting:	705393	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	6083438	bearing:		datum:

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
HA				OS07				GSM	**Gravelly Sandy SILT** brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel	M			
									Borehole OS07 terminated at 0.2m				

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

Borehole

Borehole No.	**OS08**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**
Date started:	**23.7.2009**
Date completed:	**23.7.2009**
Logged by:	**CL**
Checked by:	**JH**

Client: ***Canberra Investment Corporation Pty Ltd***

Principal:

Project: ***Jumping Creek***

Borehole Location: ***Open Space or Residential Areas***

drill model and mounting: Hand Auger	Easting: 705405	slope: -90°	R.L. Surface:		
hole diameter: 100 mm	Northing 6083251	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS08				GSM	**Gravelly Sandy SILT**brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			Shrub roots present
									Borehole OS08 terminated at 0.2m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	*OS09*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*27.7.2009*
Principal:		Date completed:	*27.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704739	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083133	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS09				SM	**Sandy SILT:** brown, no plasticity clay, soft, fine grained sand	M			High organic matter content (e.g. leaf litter)
				OS09		0.5		SM	**Sandy SILT:** brown, no plasticity clay, soft, fine grained sand				
									Borehole OS09 terminated at 0.6m				

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration** 1 2 3 4		D	disturbed sample		F	firm
W	washbore	no resistance ranging to refusal		N	standard penetration test (SPT)		St	stiff
CT	cable tool			N*	SPT - sample recovered	**moisture**	VSt	very stiff
HA	hand auger			Nc	SPT with solid cone	D dry	H	hard
DT	diatube	**water**		V	vane shear (kPa)	M moist	Fb	friable
B	blank bit	10/1/98 water level on date shown		P	pressuremeter	W wet	VL	very loose
V	V bit			Bs	bulk sample	Wp plastic limit	L	loose
T	TC bit	water inflow		E	environmental sample	W_L liquid limit	MD	medium dense
*bit shown by suffix		water outflow		R	refusal		D	dense
e.g.	ADT						VD	very dense

coffey environments

Borehole

Borehole No.	**OS10**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**
Client:	**Canberra Investment Corporation Pty Ltd**
Date started:	**23.7.2009**
Principal:	
Date completed:	**23.7.2009**
Project:	**Jumping Creek**
Logged by:	**CL**
Borehole Location:	**Open Space or Residential Areas**
Checked by:	**JH**

drill model and mounting:	Hand Auger	Easting:	705375	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083069	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS10				GSM	**Gravelly Sandy SILT** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			Shrub roots present
									Borehole OS10 terminated at 0.2m				

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

Borehole

Borehole No.	*OS11*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Client:	*Canberra Investment Corporation Pty Ltd*
Principal:	
Project:	*Jumping Creek*
Borehole Location:	*Open Space or Residential Areas*
Date started:	*27.7.2009*
Date completed:	*27.7.2009*
Logged by:	*CL*
Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704761	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082988	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS11				GS	**Gravelly SAND:** light brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole OS11 terminated at 0.2m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	*OS12*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Client:	*Canberra Investment Corporation Pty Ltd*
Date started:	*27.7.2009*
Principal:	
Date completed:	*27.7.2009*
Project:	*Jumping Creek*
Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*
Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704564	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	6082950	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS12				GS	**Gravelly SAND**red/brown, no plasticity clay, firm, medium to coarse grained sand, fine to medium gravel	M			
									Borehole OS12 terminated at 0.2m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

Form GEO 5.3 Issue 3 Rev.2

coffey environments

Borehole

Borehole No.	OS13
Sheet	1 of 1
Office Job No.:	ENVICANB00233AA
Date started:	24.7.2009
Date completed:	24.7.2009
Logged by:	CL
Checked by:	JH

Client: **Canberra Investment Corporation Pty Ltd**

Principal:

Project: **Jumping Creek**

Borehole Location: **Open Space or Residential Areas**

drill model and mounting:	Hand Auger	Easting:	704864	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082900	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS13				GS	**Gravelly SAND:** dark brown, no plasticity clay, firm, fine to medium grained sand, fine gravel	M			
									Borehole OS13 terminated at 0.2m				

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

Borehole

Borehole No.	*OS14*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Date started:	*24.7.2009*
Date completed:	*24.7.2009*
Logged by:	*CL*
Checked by:	*JH*

Client: *Canberra Investment Corporation Pty Ltd*

Principal:

Project: *Jumping Creek*

Borehole Location: *Open Space or Residential Areas*

drill model and mounting:	Hand Auger	Easting:	704740	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082849	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS14				GS	**Gravelly SAND** brown/red, no plasticity clay, firm, medium to coarse grained sand, fine to medium gravel	D			
									Borehole OS14 terminated at 0.2m				

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

Borehole

Borehole No.	*OS15*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Client:	*Canberra Investment Corporation Pty Ltd*
Principal:	
Project:	*Jumping Creek*
Borehole Location:	*Open Space or Residential Areas*
Date started:	*24.7.2009*
Date completed:	*24.7.2009*
Logged by:	*CL*
Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704610	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6087807	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS15				SM	**Sandy SILT:** red/brown, low plasticity clay, soft, fine grained sand	M			
				OS15		0.5		SC	**Sandy CLAY:** red, high plasticity clay, firm, fine grained sand				
									Borehole OS15 terminated at 0.6m				

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

Borehole

Borehole No.	*OS16*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting: 705167	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing 6082798	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS16				MS	**SILTY SAND:** brown, low plasticity clay, soft, fine grained sand	M			Grass Roots
				OS16		0.5		MS	**SILTY SAND:** brown, low plasticity clay, soft, fine grained sand				
									Borehole OS16 terminated at 0.6m				

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

Borehole

Borehole No.	*OS17*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting: Hand Auger	Easting:	704579	slope:	-90°	R.L. Surface:	
hole diameter: 100 mm	Northing	6082648	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
HA				OS17				MS	**SILTY SAND**: dark brown, low plasticity clay, soft, fine grained sand	M			Grass roots present
				OS17		0.5		MS	**SILTY SAND**: dark brown, low plasticity clay, soft, fine grained sand				
									Borehole OS17 terminated at 0.6m				

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

Borehole

Borehole No.	***OS18***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***24.7.2009***
Principal:		Date completed:	***24.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting: Hand Auger	Easting: 704636	slope: -90°	R.L. Surface:
hole diameter: 100 mm	Northing 6082566	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				OS18				GS	**Gravelly SAND:** brown, no plasticity clay, firm, fine to coarse grained sand	M			Grass roots present
									Borehole OS18 terminated at 0.2m				

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

Borehole

		Borehole No.	***OS19***
		Sheet	1 of 1
		Office Job No.:	***ENVICANB00233AA***
Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***24.7.2009***
Principal:		Date completed:	***24.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	704721	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082473	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 penetro-meter kPa 100 200 300 400	**structure and additional observations**
HA				OS19				SG	**Sandy GRAVEL** brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel	M			
									Borehole OS19 terminated at 0.2m				

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration**		D	disturbed sample		F	firm
W	washbore	1 2 3 4 no resistance ranging to refusal		N	standard penetration test (SPT)		St	stiff
CT	cable tool			N*	SPT - sample recovered	**moisture**	VSt	very stiff
HA	hand auger			Nc	SPT with solid cone	D dry	H	hard
DT	diatube	**water**		V	vane shear (kPa)	M moist	Fb	friable
B	blank bit	10/1/98 water level on date shown		P	pressuremeter	W wet	VL	very loose
V	V bit			Bs	bulk sample	Wp plastic limit	L	loose
T	TC bit	water inflow		E	environmental sample	W_L liquid limit	MD	medium dense
*bit shown by suffix		water outflow		R	refusal		D	dense
e.g.	ADT						VD	very dense

coffey environments

Borehole

Borehole No. **OS20**

Sheet 1 of 1

Office Job No.: **ENVICANB00233AA**

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704589	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082467	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
HA				OS20				MS	**SILTY SAND:** brown, low plasticity clay, soft, fine grained sand	M			Grass roots present
								SC	**Sandy CLAY:** red/brown, medium plasticity clay, firm, fine to medium grained sand				
				OS20		0.5							
									Borehole OS20 terminated at 0.6m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	***RE01***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***28.7.2009***
Principal:		Date completed:	***28.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting: Hand Auger	Easting: 704703	slope: -90°	R.L. Surface:
hole diameter: 100 mm	Northing 6083588	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE01				SC	**Sandy CLAY:** light brown, medium plasticity clay, soft, fine to medium grained sand	M			
				RE01		0.5		SC	**Sandy CLAY:** light brown, medium plasticity clay, soft, fine to medium grained sand, traces of fine gravel				
									Borehole RE01 terminated at 0.6m				

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

Borehole

Borehole No.	***RE02***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***23.7.2009***
Principal:		Date completed:	***23.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting: Hand Auger	Easting:	705139	slope:	-90°	R.L. Surface:	
hole diameter: 100 mm	Northing	6083562	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE02				MS	**SILTY SAND:** dark brown, low plasticity clay, soft, fine to medium grained sand	M			Shrub roots present
									Borehole RE02 terminated at 0.3m				
						0.5							

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

Borehole

Client:	*Canberra Investment Corporation Pty Ltd*	Borehole No.	***RE03***
		Sheet	1 of 1
		Office Job No.:	***ENVICANB00233AA***
		Date started:	***28.7.2009***
Principal:		Date completed:	***28.7.2009***
Project:	*Jumping Creek*	Logged by:	***CL***
Borehole Location:	*Open Space or Residential Areas*	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	704586	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083517	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
HA				RE03				SC	**Sandy CLAY**: red/brown, medium plasticity clay, soft, fine to medium grained sand	M			
				RE03		0.5		SC	**Sandy CLAY**: red/brown, medium plasticity clay, soft, fine to medium grained sand				
									Borehole RE03 terminated at 0.6m				

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

Borehole

Borehole No.	***RE04***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***28.7.2009***
Principal:		Date completed:	***28.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	704689	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083495	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE04				GSC	**Gravelly Sandy CLAY**: light brown, low plasticity clay, firm, fine to coarse grained sand, fine gravel	M			
									Borehole RE04 terminated at 0.2m				

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

Borehole

Borehole No.	*RE05*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Client:	*Canberra Investment Corporation Pty Ltd*
Date started:	*23.7.2009*
Principal:	
Date completed:	*23.7.2009*
Project:	*Jumping Creek*
Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*
Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	705035	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083474	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE05				GSM	**Gravelly Sandy SILT**brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel	D			Grass roots
									Borehole RE05 terminated at 0.2m				

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

Borehole

Borehole No.	*RE06*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*23.7.2009*
Principal:		Date completed:	*23.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting: Hand Auger	Easting: 705156	slope: -90°	R.L. Surface:
hole diameter: 100 mm	Northing 6083472	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE06				GSC	**Gravelly Sandy CLAY** red/brown, low plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			Grass roots present
									Borehole RE06 terminated at 0.2m				

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

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Borehole

Borehole No.	**RE07**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**
Client:	**Canberra Investment Corporation Pty Ltd**
Date started:	**27.7.2009**
Principal:	
Date completed:	**27.7.2009**
Project:	**Jumping Creek**
Logged by:	**CL**
Borehole Location:	**Open Space or Residential Areas**
Checked by:	**JH**

drill model and mounting:	Hand Auger	Easting:	704399	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083463	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
HA				RE07				MS	**SILTY SAND:** dark brown, low plasticity clay, soft, fine grained sand	M			
				RE07		0.5		SC	**Sandy CLAY:** light brown, medium plasticity clay, firm, fine grained sand	D			
									Borehole RE07 terminated at 0.6m				

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

Borehole

Borehole No.	**RE08**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*27.7.2009*
Principal:		Date completed:	*27.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704551	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083396	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 penetro-meter kPa (100 200 300 400)	structure and additional observations
HA				RE08				SM	**Sandy SILT:** brown, no plasticity clay, soft, fine to medium grained sand, traces of fine gravel	M			
						0.5		SG	**Sandy GRAVEL:** brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel	D			
				RE08									
									Borehole RE08 terminated at 0.6m				

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

Borehole

Borehole No.	***RE09***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***
Date started:	***28.7.2009***
Date completed:	***28.7.2009***
Logged by:	***CL***
Checked by:	***JH***

Client: ***Canberra Investment Corporation Pty Ltd***

Principal:

Project: ***Jumping Creek***

Borehole Location: ***Open Space or Residential Areas***

drill model and mounting:	Hand Auger	Easting:	704703	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083402	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA								SM	**Sandy SILT:** brown, no plasticity clay, soft, fine to medium grained sand, traces of fine gravel	M			Grass roots
				RE09									
									Borehole RE09 terminated at 0.2m				

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

Borehole

Borehole No.	**RE10**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**
Client:	**Canberra Investment Corporation Pty Ltd**
Date started:	**23.7.2009**
Principal:	
Date completed:	**23.7.2009**
Project:	**Jumping Creek**
Logged by:	**CL**
Borehole Location:	**Open Space or Residential Areas**
Checked by:	**JH**

drill model and mounting: Hand Auger | Easting: 705256 | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing 6083405 | 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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE10				SM	**Sandy SILTY:** brown, low plasticity clay, fine to medium grained sand	M			Roots present
									Borehole RE10 terminated at 0.3m				
						0.5							

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

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coffey environments

Borehole

Borehole No.	*RE11*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*27.7.2009*
Principal:		Date completed:	*27.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting: Hand Auger	Easting: 704436	slope: -90°	R.L. Surface:
hole diameter: 100 mm	Northing 6083349	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE11				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine to medium grained sand, traces of fine gravel	M			
									Borehole RE11 terminated at 0.2m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	*RE12*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Client:	*Canberra Investment Corporation Pty Ltd*
Principal:	
Project:	*Jumping Creek*
Borehole Location:	*Open Space or Residential Areas*
Date started:	*27.7.2009*
Date completed:	*27.7.2009*
Logged by:	*CL*
Checked by:	*JH*

drill model and mounting: Hand Auger | Easting: 704785 | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing 6083335 | 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
HA				RE12				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine to medium grained sand, traces of fine gravel	M			
				RE12		0.5		GSC	**Gravelly Sandy CLAY:** light brown, low plasticity clay, firm, fine to medium grained sand, fine to medium gravel	D			
									Borehole RE12 terminated at 0.6m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	***RE13***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***23.7.2009***
Principal:		Date completed:	***23.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting: 704936	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing 6083344	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE13				GSM	**Gravelly Sandy SILT** brown, no plasticity clay, firm, fine to medium grained sand, traces of fine to medium gravel	M			
									Borehole RE13 terminated at 0.2m				

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

Borehole

Borehole No.	*RE14*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Client:	*Canberra Investment Corporation Pty Ltd*
Date started:	*23.7.2009*
Principal:	
Date completed:	*23.7.2009*
Project:	*Jumping Creek*
Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*
Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	705039	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083372	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 penetro-meter kPa (100 200 300 400)	structure and additional observations
HA				RE14				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine grained sand, traces of fine gravel	M			
				RE14		0.5		GSC	**Gravelly Sandy CLAY** brown/red, low plasticity clay, firm, fine to medium grained sand, fine to medium gravel	D			
									Borehole RE14 terminated at 0.6m				

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

Borehole No.	RE15
Sheet	1 of 1
Office Job No.:	ENVICANB00233AA

Borehole

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*23.7.2009*
Principal:		Date completed:	*23.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	705309	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083337	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE15				GSM	**Gravelly Sandy SILT** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			Shrub roots present
									Borehole RE15 terminated at 0.3m				
						0.5							

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration** 1 2 3 4		D	disturbed sample		F	firm
W	washbore	no resistance ranging to refusal		N	standard penetration test (SPT)	**moisture**	St	stiff
CT	cable tool			N*	SPT - sample recovered	D dry	VSt	very stiff
HA	hand auger	**water**		Nc	SPT with solid cone	M moist	H	hard
DT	diatube	10/1/98 water level on date shown		V	vane shear (kPa)	W wet	Fb	friable
B	blank bit			P	pressuremeter	Wp plastic limit	VL	very loose
V	V bit	water inflow		Bs	bulk sample	W_L liquid limit	L	loose
T	TC bit	water outflow		E	environmental sample		MD	medium dense
*bit shown by suffix				R	refusal		D	dense
e.g.	ADT						VD	very dense

coffey environments

Borehole

Borehole No.	**RE16**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**
Client:	*Canberra Investment Corporation Pty Ltd*
Principal:	
Project:	*Jumping Creek*
Borehole Location:	*Open Space or Residential Areas*
Date started:	*27.7.2009*
Date completed:	*27.7.2009*
Logged by:	*CL*
Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting: 704311	slope: -90°	R.L. Surface:	
hole diameter:	100 mm	Northing 6083310	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 penetro-meter kPa (100 200 300 400)	structure and additional observations
HA				RE16				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
				RE16		0.5		GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	D			
									Borehole RE16 terminated at 0.6m				

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

Borehole

Borehole No.	*RE17*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Date started:	*27.7.2009*
Date completed:	*27.7.2009*
Logged by:	*CL*
Checked by:	*JH*

Client: *Canberra Investment Corporation Pty Ltd*

Principal:

Project: *Jumping Creek*

Borehole Location: *Open Space or Residential Areas*

drill model and mounting:	Hand Auger	Easting:	704582	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	6083280	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE17				SM	**Sandy SILTY:** brown, low plasticity clay, soft, fine grained sand, traces of fine gravel	D			
									Borehole RE17 terminated at 0.3m				
						0.5							

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration** 1 2 3 4	no resistance ranging to refusal	D	disturbed sample		F	firm
W	washbore			N	standard penetration test (SPT)		St	stiff
CT	cable tool			N*	SPT - sample recovered	**moisture**	VSt	very stiff
HA	hand auger			Nc	SPT with solid cone	D dry	H	hard
DT	diatube	**water**		V	vane shear (kPa)	M moist	Fb	friable
B	blank bit	10/1/98 water level on date shown		P	pressuremeter	W wet	VL	very loose
V	V bit			Bs	bulk sample	Wp plastic limit	L	loose
T	TC bit	water inflow		E	environmental sample	W_L liquid limit	MD	medium dense
*bit shown by suffix		water outflow		R	refusal		D	dense
e.g.	ADT						VD	very dense

coffey environments

Borehole

Borehole No.	**RE18**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**

Client:	**Canberra Investment Corporation Pty Ltd**	Date started:	**27.7.2009**
Principal:		Date completed:	**27.7.2009**
Project:	**Jumping Creek**	Logged by:	**CL**
Borehole Location:	**Open Space or Residential Areas**	Checked by:	**JH**

drill model and mounting: Hand Auger	Easting:	704695	slope:	-90°	R.L. Surface:	
hole diameter: 100 mm	Northing	6083276	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE18				SC	**Sandy CLAY** red, medium plasticity clay, soft, fine grained sand	M			
				RE18		0.5		SC	**Sandy CLAY** red, medium plasticity clay, soft, fine grained sand				
									Borehole RE18 terminated at 0.6m				

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

Borehole

Borehole No.	RE19
Sheet	1 of 1
Office Job No.:	ENVICANB00233AA

Client:	Canberra Investment Corporation Pty Ltd	Date started:	23.7.2009
Principal:		Date completed:	23.7.2009
Project:	Jumping Creek	Logged by:	CL
Borehole Location:	Open Space or Residential Areas	Checked by:	JH

drill model and mounting:	Hand Auger	Easting:	705079	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083260	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE19				MS	**SILTY SAND:** dark brown, low plasticity clay, soft, fine grained sand	M			Grass roots present
								MS	**SILTY SAND:** dark brown, low plasticity clay, soft, fine grained sand				
				RE19		0.5							
									Borehole RE19 terminated at 0.6m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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Borehole

Borehole No.	RE20
Sheet	1 of 1
Office Job No.:	ENVICANB00233AA

Client:	Canberra Investment Corporation Pty Ltd	Date started:	23.7.2009
Principal:		Date completed:	23.7.2009
Project:	Jumping Creek	Logged by:	CL
Borehole Location:	Open Space or Residential Areas	Checked by:	JH

drill model and mounting: Hand Auger	Easting: 705202	slope: -90°	R.L. Surface:
hole diameter: 100 mm	Northing 6083256	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 penetro-meter kPa (100 200 300 400)	structure and additional observations
HA				RE20				GSM	**Gravelly Sandy SILT** brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel	D			Grass roots present
				RE20		0.5		GSM	**Gravelly Sandy SILT** brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel				
									Borehole RE20 terminated at 0.6m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	***RE21***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***27.7.2009***
Principal:		Date completed:	***27.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	704633	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083199	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE21				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine to coarse grained sand, traces of fine gravel	D			
									Borehole RE21 terminated at 0.3m				
						0.5							

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

Borehole

Borehole No.	*RE22*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*23.7.2009*
Principal:		Date completed:	*23.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting: Hand Auger	Easting:	705313	slope:	-90°	R.L. Surface:	
hole diameter: 100 mm	Northing	6083207	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
HA				RE22				GSM	**Gravelly Sandy SILT**brown, no plasticity clay, firm, fine to coarse grained sand, traces of fine to medium gravel	M			
									Borehole RE22 terminated at 0.2m				

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

Borehole

Borehole No.	**RE23**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*27.7.2009*
Principal:		Date completed:	*27.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704559	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083134	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE23				GSC	**Gravelly Sandy CLAY**brown/red, low plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	D			
									Borehole RE23 terminated at 0.3m				
						0.5							

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

Borehole

Borehole No.	***RE24***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***24.7.2009***
Principal:		Date completed:	***24.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	704829	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	3083113	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE24				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine grained sand	M			Grass roots present
								SM	**Sandy SILT:** brown, low plasticity clay, firm, fine grained sand, traces of fine gravel	D			
				RE24		0.5							
									Borehole RE24 terminated at 0.6m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

Form GEO 5.3 Issue 3 Rev.2

coffey environments

Borehole

Borehole No.	**RE25**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	705050	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083151	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE25				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine to coarse grained sand	M			Grass roots present
				RE25		0.5		SM	**Sandy SILT:** brown, low plasticity clay, soft, fine to coarse grained sand				
									Borehole RE25 terminated at 0.6m				

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 ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

Form GEO 5.3 Issue 3 Rev.2

coffey environments

Borehole

Borehole No.	*RE26*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Date started:	*23.7.2009*
Date completed:	*23.7.2009*
Logged by:	*CL*
Checked by:	*JH*

Client: ***Canberra Investment Corporation Pty Ltd***

Principal:

Project: ***Jumping Creek***

Borehole Location: ***Open Space or Residential Areas***

drill model and mounting:	Hand Auger	Easting:	705158	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083108	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
HA				RE26				SM	**Sandy SILT:** dark brown, low plasticity clay, soft, fine to medium grained sand	M			Grass roots present
				RE26		0.5		GSC	**Gravelly Sandy CLAY:** red/brown, low plasticity clay, firm, fine to medium grained sand, fine gravel				
									Borehole RE26 terminated at 0.6m				

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

Borehole

		Borehole No.	***RE27***
		Sheet	1 of 1
		Office Job No.:	***ENVICANB00233AA***
Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***27.7.2009***
Principal:		Date completed:	***27.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	704653	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083059	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE27				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole RE27 terminated at 0.2m				

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

Borehole

Borehole No.	**RE28**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*23.7.2009*
Principal:		Date completed:	*23.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	705279	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6083064	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 penetro-meter kPa (100 200 300 400)	structure and additional observations
HA				RE28				GSM	**Gravelly Sandy SILT**brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel	M			Grass roots present
				RE28		0.5		GSM	**Gravelly Sandy SILT**brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel				
									Borehole RE28 terminated at 0.6m				

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

Borehole

Borehole No.	**RE29**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**
Date started:	**24.7.2009**
Date completed:	**24.7.2009**
Logged by:	**CL**
Checked by:	**JH**

Client: ***Canberra Investment Corporation Pty Ltd***

Principal:

Project: ***Jumping Creek***

Borehole Location: ***Open Space or Residential Areas***

drill model and mounting:	Hand Auger	Easting: 705130	slope: -90°		R.L. Surface:
hole diameter:	100 mm	Northing 6082979	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE29				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine grained sand	M			
										D			
				RE29		0.5		SM	**Sandy SILT:** brown, low plasticity clay, soft, fine grained sand				
									Borehole RE29 terminated at 0.6m				

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

Borehole

Borehole No.	***RE30***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***
Date started:	***24.7.2009***
Date completed:	***24.7.2009***
Logged by:	***CL***
Checked by:	***JH***

Client: ***Canberra Investment Corporation Pty Ltd***

Principal:

Project: ***Jumping Creek***

Borehole Location: ***Open Space or Residential Areas***

drill model and mounting:	Hand Auger	Easting:	705003	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082898	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE30				GS	**Gravelly SAND** red/brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole RE30 terminated at 0.2m				

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

Borehole

Borehole No.	RE31
Sheet	1 of 1
Office Job No.:	ENVICANB00233AA

Client:	Canberra Investment Corporation Pty Ltd	Date started:	24.7.2009
Principal:		Date completed:	24.7.2009
Project:	Jumping Creek	Logged by:	CL
Borehole Location:	Open Space or Residential Areas	Checked by:	JH

drill model and mounting: Hand Auger	Easting: 704901	slope: -90°	R.L. Surface:
hole diameter: 100 mm	Northing 6082864	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE31				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to medium grained sand, fine gravel	M			
									Borehole RE31 terminated at 0.3m				
						0.5							

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration** 1 2 3 4		D	disturbed sample		F	firm
W	washbore	no resistance ranging to refusal		N	standard penetration test (SPT)		St	stiff
CT	cable tool			N*	SPT - sample recovered	**moisture**	VSt	very stiff
HA	hand auger	**water**		Nc	SPT with solid cone	D dry	H	hard
DT	diatube	10/1/98 water level on date shown		V	vane shear (kPa)	M moist	Fb	friable
B	blank bit			P	pressuremeter	W wet	VL	very loose
V	V bit	water inflow		Bs	bulk sample	Wp plastic limit	L	loose
T	TC bit	water outflow		E	environmental sample	W_L liquid limit	MD	medium dense
*bit shown by suffix				R	refusal		D	dense
e.g.	ADT						VD	very dense

coffey environments

Borehole

Borehole No.	RE32
Sheet	1 of 1
Office Job No.:	ENVICANB00233AA
Date started:	24.7.2009
Date completed:	24.7.2009
Logged by:	CL
Checked by:	JH

Client: *Canberra Investment Corporation Pty Ltd*

Principal:

Project: *Jumping Creek*

Borehole Location: *Open Space or Residential Areas*

drill model and mounting:	Hand Auger	Easting:	704835	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082804	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE32				GS	**Gravelly SAND** brown/red, no plasticity clay, firm, fine to coarse grained sand, fine gravel	M			
									Borehole RE32 terminated at 0.2m				

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

Borehole

Borehole No.	**RE33**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting: Hand Auger	Easting:	704994	slope:	-90°	R.L. Surface:	
hole diameter: 100 mm	Northing	6082790	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
HA				RE33				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole RE33 terminated at 0.2m				

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

Borehole

Borehole No.	**RE34**
Sheet	1 of 1
Office Job No.:	**ENVICANB00233AA**
Client:	**Canberra Investment Corporation Pty Ltd**
Date started:	**27.7.2009**
Principal:	
Date completed:	**27.7.2009**
Project:	**Jumping Creek**
Logged by:	**CL**
Borehole Location:	**Open Space or Residential Areas**
Checked by:	**JH**

drill model and mounting:	Hand Auger	Easting:	704479	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	6082756	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE34				GSC	**Gravelly Sandy CLAY** red/brown, low plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
				RE34		0.5		GSC	**Gravelly Sandy CLAY** red/brown, low plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	D			
									Borehole RE34 terminated at 0.6m				

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

Borehole

Borehole No.	*RE35*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***24.7.2009***
Principal:		Date completed:	***24.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting: Hand Auger	Easting: 704727	slope: -90°	R.L. Surface:
hole diameter: 100 mm	Northing 6082759	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE35				SMG	**Sandy SILTY GRAVEL**brown, low plasticity clay, soft, fine to medium grained sand, fine gravel	M			
				RE35		0.5		SMG	**Sandy SILTY GRAVEL**brown, low plasticity clay, soft, fine to medium grained sand, fine gravel	D			
									Borehole RE35 terminated at 0.6m				

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

Borehole

Borehole No.	*RE36*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*27.7.2009*
Principal:		Date completed:	*27.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704303	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	6082708	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
HA				RE36				SM	**Sandy SILT**: dark brown, low plasticity clay, soft, fine grained sand, traces of medium gravel	M			
									Borehole RE36 terminated at 0.3m				
						0.5							

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

Borehole

Borehole No.	*RE37*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*
Client:	*Canberra Investment Corporation Pty Ltd*
Principal:	
Project:	*Jumping Creek*
Borehole Location:	*Open Space or Residential Areas*
Date started:	*27.7.2009*
Date completed:	*27.7.2009*
Logged by:	*CL*
Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704410	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082644	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE37				SM	**Sandy SILT:** brown, low plasticity clay, soft, fine grained sand	M			
				RE37		0.5		SC	**Sandy CLAY:** red, medium plasticity clay, soft, fine grained sand				
									Borehole RE37 terminated at 0.6m				

method		support		notes, samples, tests		classification symbols and soil description	consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system	VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter		S	soft
RR	roller/tricone	**penetration** 1 2 3 4	no resistance ranging to refusal	D	disturbed sample		F	firm
W	washbore			N	standard penetration test (SPT)		St	stiff
CT	cable tool			N*	SPT - sample recovered	**moisture**	VSt	very stiff
HA	hand auger	**water**		Nc	SPT with solid cone	D dry	H	hard
DT	diatube	10/1/98 water level on date shown		V	vane shear (kPa)	M moist	Fb	friable
B	blank bit			P	pressuremeter	W wet	VL	very loose
V	V bit			Bs	bulk sample	Wp plastic limit	L	loose
T	TC bit	water inflow		E	environmental sample	W_L liquid limit	MD	medium dense
*bit shown by suffix		water outflow		R	refusal		D	dense
e.g.	ADT						VD	very dense

BOREHOLE ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	***RE38***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***27.7.2009***
Principal:		Date completed:	***27.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting:	704488	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082581	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE38				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole RE38 terminated at 0.2m				

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

Borehole

Borehole No.	*RE39*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*27.7.2009*
Principal:		Date completed:	*27.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	704305	slope:	-90°	R.L. Surface:
hole diameter:	100 mm	Northing	6082555	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE39				GS	**Gravelly SAND:** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			Shrub roots present
						0.5			Borehole RE39 terminated at 0.3m				

method		support		notes, samples, tests		classification symbols and soil description		consistency/density index	
AS	auger screwing*	M mud	N nil	U_{50}	undisturbed sample 50mm diameter	based on unified classification system		VS	very soft
AD	auger drilling*	C casing		U_{63}	undisturbed sample 63mm diameter			S	soft
RR	roller/tricone	**penetration** 1 2 3 4	no resistance ranging to refusal	D	disturbed sample			F	firm
W	washbore			N	standard penetration test (SPT)			St	stiff
CT	cable tool			N*	SPT - sample recovered	**moisture**		VSt	very stiff
HA	hand auger	**water**		Nc	SPT with solid cone	D	dry	H	hard
DT	diatube		10/1/98 water level on date shown	V	vane shear (kPa)	M	moist	Fb	friable
B	blank bit			P	pressuremeter	W	wet	VL	very loose
V	V bit		water inflow	Bs	bulk sample	Wp	plastic limit	L	loose
T	TC bit		water outflow	E	environmental sample	W_L	liquid limit	MD	medium dense
*bit shown by suffix				R	refusal			D	dense
e.g.	ADT							VD	very dense

BOREHOLE ENVICANB00233AA JUMPING CREEK.GPJ COFFEYVER7REV1.GDT 12.1.10

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coffey environments

Borehole

Borehole No.	***RE40***
Sheet	1 of 1
Office Job No.:	***ENVICANB00233AA***

Client:	***Canberra Investment Corporation Pty Ltd***	Date started:	***27.7.2009***
Principal:		Date completed:	***27.7.2009***
Project:	***Jumping Creek***	Logged by:	***CL***
Borehole Location:	***Open Space or Residential Areas***	Checked by:	***JH***

drill model and mounting:	Hand Auger	Easting: 704412	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing 6082486	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE40				GS	**Gravelly SAND** brown, no plasticity clay, firm, fine to coarse grained sand, fine to medium gravel	M			
									Borehole RE40 terminated at 0.2m				

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

Borehole

Borehole No.	*RE41*
Sheet	1 of 1
Office Job No.:	*ENVICANB00233AA*

Client:	*Canberra Investment Corporation Pty Ltd*	Date started:	*24.7.2009*
Principal:		Date completed:	*24.7.2009*
Project:	*Jumping Creek*	Logged by:	*CL*
Borehole Location:	*Open Space or Residential Areas*	Checked by:	*JH*

drill model and mounting:	Hand Auger	Easting:	705258	slope:	-90°	R.L. Surface:	
hole diameter:	100 mm	Northing	6082937	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 penetro-meter kPa 100 200 300 400	structure and additional observations
HA				RE41				GSM	**Gravelly Sandy SILT**brown, no plasticity clay, firm, fine to medium grained sand, fine to medium gravel	M			
									Borehole RE41 terminated at 0.2m				

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

Photoionisation Detector Results

Job No: ENVICANB00233AA

Sheet: 1 of 5

client:	**Canberra Investment Corporation Pty Ltd**	office:	**Canberra**
principal:		date:	**23-28/07/09**
project:	**Jumping Creek**	by:	**CL**
location:	**Open Space or Residential Areas**	checked by:	**JH**
PID serial number:	***MINIRAE 2000***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: @08:00am   Calibration gas: ___100____ ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual Reading_____0.0_______ppm   ☑ Span Calibration (__100_ppm) Actual Reading _____100__ppm

Calibrated by: _______CL_______

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
OS01	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
OSO2	0.0-0.2	0.5	0.0	0.0	0.0	28/07/09
OSO3	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS04	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS05	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
OS06	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS07	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
OS08	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
OS09	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
OS09	0.5-0.6	0.5	0.0	0.3	0.1	27/07/09
OS10	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
OS11	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
OS12	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
OS13	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS14	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS15	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS15	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09

Fill in the test type as follows:-   BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Photoionisation Detector Results

Job No: ENVICANB00233AA

Sheet: 2 of 5

client:	**Canberra Investment Corporation Pty Ltd**	office:	**Canberra**
principal:		date:	**23-28/07/09**
project:	**Jumping Creek**	by:	**CL**
location:	**Open Space or Residential Areas**	checked by:	**JH**
PID serial number:	***MINIRAE 2000***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: @08:00am Calibration gas: ___100____ ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual Reading_____0.0_______ppm ☑ Span Calibration (__100_ppm) Actual Reading _____100__ppm

Calibrated by: _______CL________

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
OS16	0.0-0.2	0.5	0.0	0.3	0.0	24/07/09
OS16	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09
OS17	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS17	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09
OS18	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS19	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS20	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
OS20	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09
RE01	0.0-0.2	0.5	0.0	0.0	0.0	28/07/09
RE01	0.5-0.6	0.5	0.0	0.0	0.0	28/07/09
RE02	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE03	0.0-0.2	0.5	0.0	0.2	0.0	28/07/09
RE03	0.5-0.6	0.5	0.0	0.0	0.0	28/07/09
RE04	0.0-0.2	0.5	0.0	0.0	0.0	28/07/09
RE05	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE06	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE07	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

coffey environments

Photoionisation Detector Results

client:	**Canberra Investment Corporation Pty Ltd**	office:	**Canberra**
principal:		date:	**23-28/07/09**
project:	**Jumping Creek**	by:	**CL**
location:	**Open Space or Residential Areas**	checked by:	**JH**
PID serial number:	***MINIRAE 2000***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: @08:00am Calibration gas: ___100____ ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual Reading_____0.0_______ppm ☑ Span Calibration (__100_ppm) Actual Reading _____100__ppm

Calibrated by: _______CL_______

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
RE07	0.5-0.6	0.5	0.0	0.0	0.0	27/07/09
RE08	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE08	0.5-0.6	0.5	0.0	0.0	0.0	27/07/09
RE09	0.0-0.2	0.5	0.0	0.0	0.0	28/07/09
RE10	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE11	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE12	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE12	0.5-0.6	0.5	0.0	0.0	0.0	27/07/09
RE13	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE14	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE14	0.5-0.6	0.5	0.0	0.0	0.0	23/07/09
RE15	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE16	0.-0.2	0.5	0.0	0.0	0.0	27/07/09
RE16	0.5-0.6	0.5	0.0	0.0	0.0	27/07/09
RE17	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE18	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE18	0.5-0.6	0.5	0.0	0.0	0.0	27/07/09

Fill in the test type as follows:- BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

coffey environments

Photoionisation Detector Results

Job No: ENVICANB00233AA

Sheet: 4 of 5

client:	**Canberra Investment Corporation Pty Ltd**	office:	**Canberra**
principal:		date:	**23-28/07/09**
project:	**Jumping Creek**	by:	**CL**
location:	**Open Space or Residential Areas**	checked by:	**JH**
PID serial number:	***MINIRAE 2000***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: @08:00am   Calibration gas: ___100____ ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual Reading_____0.0_______ppm   ☑ Span Calibration (__100_ppm) Actual Reading _____100__ppm

Calibrated by: _______CL_______

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
RE19	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE19	0.5-0.6	0.5	0.0	0.0	0.0	23/07/09
RE20	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE20	0.5-0.6	0.5	0.0	0.0	0.0	23/07/09
RE21	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE22	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE23	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE24	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
RE24	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09
RE25	0.0-0.2	0.5	0.0	0.2	0.0	24/07/09
RE25	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09
RE26	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE26	0.5-0.6	0.5	0.0	0.0	0.0	23/07/09
RE27	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE28	0.0-0.2	0.5	0.0	0.0	0.0	23/07/09
RE28	0.5-0.6	0.5	0.0	0.0	0.0	23/07/09
RE29	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09

Fill in the test type as follows:-   BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

coffey environments

Photoionisation Detector Results

client:	**Canberra Investment Corporation Pty Ltd**	office:	**Canberra**
principal:		date:	**23-28/07/09**
project:	**Jumping Creek**	by:	**CL**
location:	**Open Space or Residential Areas**	checked by:	**JH**
PID serial number:	***MINIRAE 2000***	lamp voltage:	***10.6eV***

PID Calibration Record

Date / Time of Calibration: @08:00am   Calibration gas: ___100____ ppm ISOBUTYLENE

☑ Zero Calibration (0.0ppm) Actual Reading_____0.0_______ppm   ☑ Span Calibration (__100_ppm) Actual Reading _____100__ppm

Calibrated by: _______CL_______

SAMPLE ID	DEPTH	DURATION (mins)	BACKGROUND READING (ppm)	MAXIMUM READING (ppm)	LAST READING (ppm)	NOTES
RE29	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09
RE30	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
RE31	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
RE32	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
RE33	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
RE34	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE34	0.5-0.6	0.5	0.0	0.0	0.0	27/07/09
RE35	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09
RE35	0.5-0.6	0.5	0.0	0.0	0.0	24/07/09
RE36	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE37	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE37	0.5-0.6	0.5	0.0	0.0	0.0	27/07/09
RE38	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE39	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE40	0.0-0.2	0.5	0.0	0.0	0.0	27/07/09
RE41	0.0-0.2	0.5	0.0	0.0	0.0	24/07/09

Fill in the test type as follows:-

BH ( ) = soil gas probe sample; (soil type - unified classification system in parentheses)
HS ( ) = headspace sample (with soil type-unified classification system in parentheses)

Appendix D
Photograph Log

Stage 3 Contamination Assessment,
Jumping Creek Queanbeyan, NSW


Photograph 1: Mine Site 1 looking South


Photograph 2: Mine Site 1 shaft

Photograph 3: Mine Site 1 looking North East

Photograph 4: Mine Site 1 looking East


Photograph 5: Kiln structure

Photograph 6: Kiln looking North East

Photograph 7: Kiln looking North

Photograph 8: Mine Site 3 looking North


Photograph 9: Mine Site 3 looking North West


Photograph 10: Mine Site 3 looking East

Photograph 11: Mine Site 4 looking West

Photograph 12: Mine Site 4 stockpiled material

Photograph 13: Mine Site 4 stockpiled material and open cut area

Photograph 14: Mine Site 4 stockpiled material


Photograph 15: Mine Site 4 stockpiled material

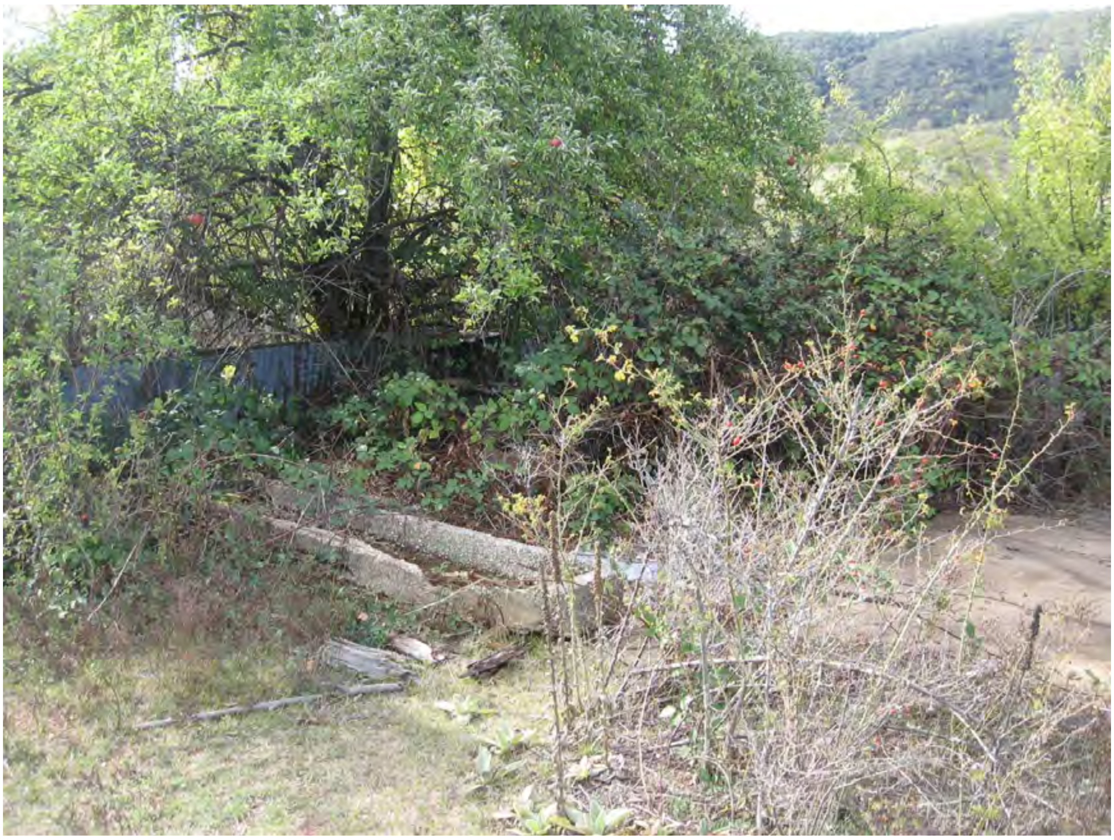

Photograph 16: Mine Site 4 looking South


Photograph 17: Mine Site 4 stockpiled material


Photograph 18: Mine Site 4 below mine adit looking East


Photograph 19: Mine Site 4 – Shaft


Photograph 20: Mine Site 4 below mine adit looking West



Photograph 21: Minerals Processing Area – Trough structure

Photograph 22: Minerals Processing Area – Trough structure and concrete slab


Photograph 23: Minerals Processing Area – Old AST and concrete slab

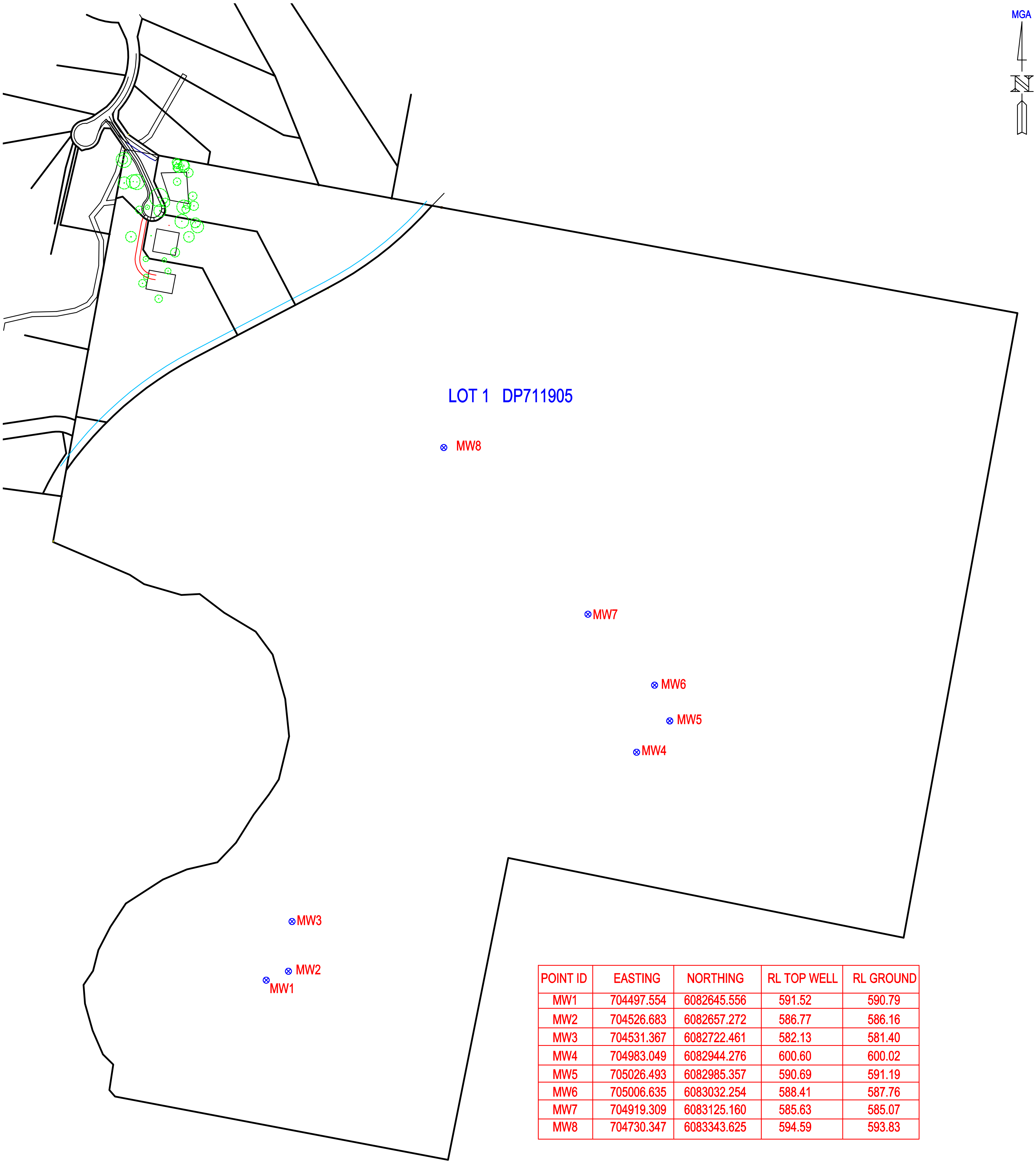

Photograph 24: Minerals Processing Area looking West


Photograph 25: Minerals processing Area – shallow concrete drain to sump structure


Photograph 26: Minerals processing Area – remaining infrastructure

Appendix E
Well Survey Report

Stage 3 Contamination Assessment, Jumping Creek Queanbeyan, NSW



POINT ID	EASTING	NORTHING	RL TOP WELL	RL GROUND
MW1	704497.554	6082645.556	591.52	590.79
MW2	704526.683	6082657.272	586.77	586.16
MW3	704531.367	6082722.461	582.13	581.40
MW4	704983.049	6082944.276	600.60	600.02
MW5	705026.493	6082985.357	590.69	591.19
MW6	705006.635	6083032.254	588.41	587.76
MW7	704919.309	6083125.160	585.63	585.07
MW8	704730.347	6083343.625	594.59	593.83

IMPORTANT NOTE

This plan is prepared for COFFEY ENVIRONMENTS from a combination of field survey and existing records for the purpose of designing new constructions on the land and should not be used for any other purpose. The title boundaries shown hereon were not marked by the author at the time of survey.

Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services. This note is an integral part of the plan.

Peter Williams
Registered Surveyor

4D SURVEYING
The Extra Dimension

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Queanbeyan NSW 2620
T 02 6297 3518
F 02 6297 9748
ABN 30 035 481 400
www.4Dsurveying.com.au

SCALE 1:5000 A3	AMENDMENTS	CLIENT: COFFEY ENVIRONMENTS	SHEET No. 1
ORIGIN OF LEVELS PM55022 RL654.022		SURVEY OF MONITORING WELLS LOT 1 DP 711905 JUMPING CREEK	No. OF SHEETS:
			DATE: 22.10.2009
DATUM: MGA & AHD71			PLAN No. 17021 Wells.dwg

Appendix F
Groundwater Field Parameters

Stage 3 Contamination Assessment,
Jumping Creek Queanbeyan, NSW

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FIELD REPORTING COVER SHEET

Project Name: Jumping Creek **Date:** 8/10/09

Project Number: EC00233AA **Arrival Time:** 8.00

Field Personnel (initials): CL + ED **Departure Time:** 4.00

Project Manager (initials): JH

Purpose of Visit (Tick Appropriate Box)

Drilling	☐	GW Sampling	☑	Soil Sampling	☐
Gauging	☐	Cable locating	☐	Other	☐
Site inspection	☐	Tank removal and validation	☐	Specify:	

Equipment Used (Provide ID Number)

FID: ______ LEL/O2/Toxic Gas Meter: ______

PID: ______ Water Quality Meter : 90FLT

IP: ✓ Other Meter: ______

Equipment calibrated prior to use, and/or equipment calibration records checked : ☐

Other Calibration Performed (if any): ______

Sampling

Sampling Conducted: Y ☑ N ☐ Matrix: Soil ☐ Water ☑ Other ☐

COC Completed and Samples Sent: Y ☑ N ☐ COC No(s): ______

Primary Lab: SGS Secondary Lab: MGT

Description of Activities (e.g., What did you do – drilled 3 soil borings (i.e. SB1 – SB7), installed 3 MWs, etc.

Purging + sampling of wells (MW1 - MW8) at Jumping Creek

Attached Forms

Daily Field Summary: Y ☐ N ☑

Site Map / Sketch: Y ☐ N ☑

Field Quality Control Log Y ☑ N ☐

Relevant Field Forms (list): ______

Others (Specify): ______

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FIELD QUALITY CONTROL LOG

Project No.	EC00233AA
Date:	8/10/09
Page 1	of 1

Project Name: Jumping Creek

Field Personnel (Initials): CL + ED

Project Manager (Initials): JH

What Matrix is Being Sampled?

- Soil ☐
- Groundwater ☑
- Other ☐
- Surface Water ☐

Field QC Sample ID	Sampling Date/ Time	Description
(example) QC7	8/04/2006; 0900	Duplicate of SB1/4.0
QC1/QC1A	8/10/09	Dup/Trip of MW8

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Well Gauging Form

PROJECT NAME: Jumping Creek
FIELD PERSONNEL: CL + ED
PROJECT MANAGER: SH

PROJECT NUMBER: EC00233AA
DATE: 8/10/09

FIELD EQUIPMENT:

Equipment Used: ______ IP Serial Number: ______

REFER TO SOPs WHEN GAUGING WELLS:

SOP - Monitoring Well Gauging and SOP – Decontamination of Sampling Equipment

Time of Day	Well ID	Well Diameter	Total Well Depth **note 1**	Depth to PSH (NAPL) [A]	Depth to Groundwater [B]	PSH Thickness [B-A]	Height of Well Stick-Up	COMMENTS (**note 2**) ODOUR, COLOUR, SHEEN, NAPL (and its colour), REMEDIATION SYSTEM, etc
		mm	m	mBTOC	mBTOC	mm	m	
10:30	MW1	50	24.025		16.300		.555	No odour
10:15	MW2	50	+30.5		21.002		.663	No odour
10.00	MW3	50	19.925		12.344		.678	No odour
9.15	MW4	50	+30.5		16.907		.519	No odour, clear
9.05	MW5	50	18.005		9.750		.455	No odour, clear
8.50	MW6	50	+30.5		7.451		.594	No odour, clear
8.40	MW7	50	18.014		6.743		.508	No odours, clear
8.35	MW8	50	28.132		15.802		.724	No odour, clear,

Notes: 1 Indicate in 'Comments' column if measured Total Well Depth differs from log. 2 Do not attempt to sniff the monitoring well to detect any odours, only note any <u>apparent</u> odour when the well cap is opened

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Groundwater Sampling Form (A) - General

PROJECT NAME: Jumping Creek **PROJECT NUMBER:** EC00233AA

FIELD PERSONNEL: CL - ED **DATE:** 8.10.09

PROJECT MANAGER: SH

WELL ID: MW1 **METER ID:** ____ **TOTAL WELL DEPTH:** 24.025 **SCREEN INTERVAL:** 0.555

EQUIPMENT USED: BAILER ☐ **WATERRA** ☐ **OTHER** ____ **WELL DIAMETER:** 50 **WELL STICK-UP:** ____

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(TOTAL WELL DEPTH) – (DEPTH TO WATER) = (WATER COLUMN)

____ m - 16.300 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l)		ELECTRICAL CONDUCTIVITY (mS or µS/cm)		pH (pH units)		REDOX POTENTIAL (mV)		TEMPERATURE (°C)		CLARITY – tick one					COMMENTS ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
				READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE	Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	
0	NA	5		3.30		~~7~~60		7.31		266		15.5		✓					No odoor
		10		3.69		594		7.34		212		15.7				✓			" greyish
		15		3.61		514		7.32		214		15.6				✓			" "
		20		3.64		521		7.32		215		15.6				✓			" "
		25		3.67		517		7.32		210		15.6				✓			" "
STABILISATION CRITERIA (3 readings within following ranges)				± 10%		± 3%		± 0.1 unit		± 10mV		± 0.2°C							

DUPLICATE COLLECTED: Y ☐ N ☑ DUPLICATE ID: ____ **TRIPLICATE COLLECTED:** Y ☐ N ☑ TRIPLICATE ID: ____

WERE METALS FIELD FILTERED? Y ☑ N ☐ UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

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Groundwater Sampling Form (A) - General

PROJECT NAME: Jumping Creek **PROJECT NUMBER:** EC00233AA

FIELD PERSONNEL: CL - ED **DATE:** 8-10-09

PROJECT MANAGER: JH

WELL ID: MW2 **METER ID:** ____ **TOTAL WELL DEPTH:** +30.5 **SCREEN INTERVAL:** ____

EQUIPMENT USED: BAILER ☐ **WATERRA** ☐ **OTHER** ____ **WELL DIAMETER:** 50 **WELL STICK-UP:** .663

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(TOTAL WELL DEPTH) – (DEPTH TO WATER) = (WATER COLUMN)

____ m - 21.002 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l)		ELECTRICAL CONDUCTIVITY (mS or µS/cm)		pH (pH units)		REDOX POTENTIAL (mV)		TEMPERATURE (°C)		CLARITY – tick one					COMMENTS ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
				READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE	Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	
0	NA	5		3.82		812		7.26		250		17.3		✓					No odour
		10		4.14		822		7.13		253		16.4			✓				"
		15		3.97		821		7.11		271		16.6			✓				"
		20		4.04		819		7.10		263		16.5			✓				"
		25		4.01		819		7.10		269		16.5			✓				"
STABILISATION CRITERIA (3 readings within following ranges)				± 10%		± 3%		± 0.1 unit		± 10mV		± 0.2°C							

DUPLICATE COLLECTED: Y ☐ N ☐ DUPLICATE ID: ____ **TRIPLICATE COLLECTED:** Y ☐ N ☐ TRIPLICATE ID: ____

WERE METALS FIELD FILTERED? Y ☐ N ☐ UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

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Groundwater Sampling Form (A) - General

PAGE ____ OF ____

PROJECT NAME: Jumping Creek

PROJECT NUMBER: EC00233AA

FIELD PERSONNEL: CL + ED

DATE: 8/10

PROJECT MANAGER: JH

WELL ID: MW3 **METER ID:** 90 FLT **TOTAL WELL DEPTH:** 19.925 **SCREEN INTERVAL:** ____

EQUIPMENT USED: **BAILER** [✓] **WATERRA** [ ] **OTHER** ____ **WELL DIAMETER:** 50mm **WELL STICK-UP:** .678

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(TOTAL WELL DEPTH) – (DEPTH TO WATER) = (WATER COLUMN)

19.925 m - 12.346 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l)		ELECTRICAL CONDUCTIVITY (mS or µS/cm)		pH (pH units)		REDOX POTENTIAL (mV)		TEMPERATURE (°C)		CLARITY – tick one					COMMENTS ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
				READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE	Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	
0	NA	5		3.94		869		7.50		118		15.6				✓			No odour, brown
		10		3.87		912		7.24		109		15.2					✓		" "
		15		3.62		901		7.18		113		15.0					✓		" "
		20		3.69		893		7.20		108		14.9						✓	" "
		25		3.60		884		7.20		110		15.0						✓	" "
STABILISATION CRITERIA (3 readings within following ranges)				± 10%		± 3%		± 0.1 unit		± 10mV		± 0.2°C							

DUPLICATE COLLECTED: Y [ ] N [✓] DUPLICATE ID: ____

TRIPLICATE COLLECTED: Y [ ] N [✓] TRIPLICATE ID: ____

WERE METALS FIELD FILTERED? Y [✓] N [ ] UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

PROJECT NAME: Jumping Creek **PROJECT NUMBER:** EC00233AA

FIELD PERSONNEL: CL + ED **DATE:** 8/10/09

PROJECT MANAGER: JH

WELL ID: MW4 **METER ID:** 90 FLT **TOTAL WELL DEPTH:** +30.5 **SCREEN INTERVAL:** ____

EQUIPMENT USED: **BAILER** ☑ **WATERRA** ☐ **OTHER** ____ **WELL DIAMETER:** 50 **WELL STICK-UP:** .519

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(Total Well Depth) – (Depth to Water) = (Water Column)

+30.5 m - 16.907 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l)		ELECTRICAL CONDUCTIVITY (mS or µS/cm)		pH (pH units)		REDOX POTENTIAL (mV)		TEMPERATURE (°C)		CLARITY – tick one					COMMENTS ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
				READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE	Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	
0	NA	5		3.96		961		7.08		98		16.2		✓					No odour
		10		3.29		1002		7.02		69		16.7		✓					"
		15		2.98		1021		7.04		61		16.9			✓				" Pale grey
		20		2.96		1009		7.00		66		16.9			✓				" "
		25		2.91		1014		7.01		64		17.0			✓				" "
STABILISATION CRITERIA (3 readings within following ranges)				**± 10%**		**± 3%**		**± 0.1 unit**		**± 10mV**		**± 0.2°C**							

DUPLICATE COLLECTED: **Y** ☐ **N** ☑ DUPLICATE ID: ____

TRIPLICATE COLLECTED: **Y** ☐ **N** ☑ TRIPLICATE ID: ____

WERE METALS FIELD FILTERED? **Y** ☑ **N** ☐ UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

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Groundwater Sampling Form (A) - General

PAGE ____ OF ____

PROJECT NAME: Jumping Creek **PROJECT NUMBER:** EC00233AF

FIELD PERSONNEL: CL - ED **DATE:** 8-10-09

PROJECT MANAGER: SH

WELL ID: MW5 **METER ID:** ____ **TOTAL WELL DEPTH:** 18.005 **SCREEN INTERVAL:** ____

EQUIPMENT USED: BAILER [✓] **WATERRA** [ ] **OTHER** ____ **WELL DIAMETER:** 50 **WELL STICK-UP:** .485

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(Total Well Depth) – (Depth to Water) = (Water Column)

18.005 m - 9.750 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l) READING	DISSOLVED OXYGEN CHANGE*	ELECTRICAL CONDUCTIVITY (mS or µS/cm) READING	ELECTRICAL CONDUCTIVITY CHANGE*	pH (pH units) READING	pH CHANGE*	REDOX POTENTIAL (mV) READING	REDOX POTENTIAL CHANGE*	TEMPERATURE (°C) READING	TEMPERATURE CHANGE	CLARITY – tick one: Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	COMMENTS ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
0	NA	5		336		383		7.53		97		14.2		✓					No odour
		10		3.77		947		7.55		105		14.1				✓			No odour, greyish
		15		362		964		7.49		89		14.0					✓		" dark grey
		20		3.59		940		7.37		84		13.9					✓		" "
		25		3.61		949		7.42		87		13.9					✓		" "
STABILISATION CRITERIA (3 readings within following ranges)				± 10%		± 3%		± 0.1 unit		± 10mV		± 0.2°C							

DUPLICATE COLLECTED: Y [ ] N [✓] DUPLICATE ID: ____ **TRIPLICATE COLLECTED:** Y [ ] N [✓] TRIPLICATE ID: ____

WERE METALS FIELD FILTERED? Y [✓] N [ ] UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

coffey environments

Groundwater Sampling Form (A) - General

PROJECT NAME: Jumping Creek **PROJECT NUMBER:** EC00233AA

FIELD PERSONNEL: CL + ED **DATE:** 8/10/09

PROJECT MANAGER: JH

WELL ID: MW6 **METER ID:** ____ **TOTAL WELL DEPTH:** ____ **SCREEN INTERVAL:** ____

EQUIPMENT USED: BAILER ☑ **WATERRA** ☐ **OTHER** ____ **WELL DIAMETER:** 50 **WELL STICK-UP:** 0.514

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(Total Well Depth) – (Depth to Water) = (Water Column)

+30.5 m - 7.4 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l)		ELECTRICAL CONDUCTIVITY (mS or µS/cm)		pH (pH units)		REDOX POTENTIAL (mV)		TEMPERATURE (°C)		CLARITY – tick one					COMMENTS
				READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE	Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
0	NA	5		1.75		1118		6.96		103		13.4		✓					No odour
		10		1.98		720		7.11		88		13.9			✓				"
		15		2.10		1125		7.19		90		14.0			✓				
		20		2.02		1108		7.20		92		14.0			✓				
		25		2.08		1114		7.20		94		14.0			✓				
STABILISATION CRITERIA (3 readings within following ranges)				± 10%		± 3%		± 0.1 unit		± 10mV		± 0.2°C							

DUPLICATE COLLECTED: Y ☐ N ☑ DUPLICATE ID: ____ **TRIPLICATE COLLECTED:** Y ☐ N ☑ TRIPLICATE ID: ____

WERE METALS FIELD FILTERED? Y ☑ N ☐ UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

coffey environments

Groundwater Sampling Form (A) - General

PAGE ____ OF ____

PROJECT NAME: Jumping Creek **PROJECT NUMBER:** EC00233AA

FIELD PERSONNEL: CL + ED **DATE:** 8/10/09

PROJECT MANAGER: JH

WELL ID: MW7 **METER ID:** 90 FLT **TOTAL WELL DEPTH:** 18.014 **SCREEN INTERVAL:** ____

EQUIPMENT USED: BAILER ☑ WATERRA ☐ OTHER ____ **WELL DIAMETER:** 50mm **WELL STICK-UP:** .508

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(Total Well Depth) – (Depth to Water) = (Water Column)

18.014 m - 6.743 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l) READING	DISSOLVED OXYGEN CHANGE*	ELECTRICAL CONDUCTIVITY (mS or µS/cm) READING	ELECTRICAL CONDUCTIVITY CHANGE*	pH (pH units) READING	pH CHANGE*	REDOX POTENTIAL (mV) READING	REDOX POTENTIAL CHANGE*	TEMPERATURE (°C) READING	TEMPERATURE CHANGE	CLARITY – tick one: Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	COMMENTS ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
0	NA	5		5.37		1101		8.40		87		12.4		✓					No odour
		10		4.70		782		8.30		76		12.9			✓				" " , pale grey
		15		4.61		978		8.19		69		13.5			✓				" " " "
		20		4.31		901		8.26		74		13.9					✓		" " , grey
		25		4.38		970		8.31		81		13.8					✓		" " "
		30		4.21		952		8.27		76		13.9					✓		" " "
STABILISATION CRITERIA (3 readings within following ranges)				± 10%		± 3%		± 0.1 unit		± 10mV		± 0.2°C							

DUPLICATE COLLECTED: Y ☐ N ☑ DUPLICATE ID: ____ **TRIPLICATE COLLECTED:** Y ☐ N ☑ TRIPLICATE ID: ____

WERE METALS FIELD FILTERED? Y ☑ N ☐ UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

coffey environments

Groundwater Sampling Form (A) - General

PAGE ____ OF ____

PROJECT NAME: Jumping Creek
PROJECT NUMBER: EC00233AA
FIELD PERSONNEL: CL + ED
DATE: 8/10/09
PROJECT MANAGER: JH

WELL ID: MW8
METER ID:
TOTAL WELL DEPTH: 28.132
SCREEN INTERVAL:
EQUIPMENT USED: BAILER ☑ WATERRA ☐ OTHER ____
WELL DIAMETER: 50mm
WELL STICK-UP: 0.724

WELL GAUGING AND PURGE VOLUME CALCULATIONS

(TOTAL WELL DEPTH) – (DEPTH TO WATER) = (WATER COLUMN)

28.132 m - 15.802 = ____ m

Use water column calculation together with the procedures in 'SOP- Groundwater Sampling - Bailers' to determine the correct volume to be purged from the well (enter this value in the field to the right)

LITRES PER 1 WELL VOLUME ____ L

WELL HEADSPACE PID READING

PID READING

PPM: 0.0

TIME OF DAY	CYCLE/ PUMP RATE (ml/min)	VOLUME (L)	DEPTH TO WATER (m)	DISSOLVED OXYGEN (mg/l)		ELECTRICAL CONDUCTIVITY (mS or μS/cm)		pH (pH units)		REDOX POTENTIAL (mV)		TEMPERATURE (°C)		CLARITY – tick one					COMMENTS
				READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE	Clear	Slightly Cloudy	Cloudy	Very Cloudy	Turbid	ODOUR, COLOUR, SEDIMENTS, PSH COLLECTED, etc
0	NA	5		2.74		1355		7.46		134		12.2		✓					No colour
		10		2.58		1301		7.48		98		12.6		✓					" "
		15		2.52		1289		7.49		74		12.8			✓				Pale grey
		20		2.60		1263		7.51		76		12.8			✓				" "
		25		2.55		1269		7.51		77		12.9			✓				" "
STABILISATION CRITERIA (3 readings within following ranges)				± 10%		± 3%		± 0.1 unit		± 10mV		± 0.2°C							

DUPLICATE COLLECTED: Y ☑ N ☐ DUPLICATE ID: QC1

TRIPLICATE COLLECTED: Y ☑ N ☐ TRIPLICATE ID: QC1A

WERE METALS FIELD FILTERED? Y ☑ N ☐ UNFILTERED SAMPLES MUST NOT BE PUT INTO A PRESERVED CONTAINER (IE. 'METALS' BOTTLE)

Appendix G
95% UCL Outputs

Stage 3 Contamination Assessment, Jumping Creek Queanbeyan, NSW

Arsenic, Mineral Processing Area

		Variable:	arsenic
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	32	Shapiro-Wilk Test Statisitic	0.92794
Number of Unique Samples	20	Shapiro-Wilk 5% Critical Value	0.93
Minimum	7	Data not normal at 5% significance level	
Maximum	45		
Mean	21.25	95% UCL (Assuming Normal Distribution)	
Median	20	Student's-t UCL	24.39358
Standard Deviation	10.48809		
Variance	110	Gamma Distribution Test	
Coefficient of Variation	0.493557	A-D Test Statistic	0.381276
Skewness	0.661395	A-D 5% Critical Value	0.750103
		K-S Test Statistic	0.102836
Gamma Statistics		K-S 5% Critical Value	0.156086
k hat	4.220552	Data follow gamma distribution	
k star (bias corrected)	3.845709	at 5% significance level	
Theta hat	5.034886		
Theta star	5.525639	95% UCLs (Assuming Gamma Distribution)	
nu hat	270.1154	Approxi	24.81147
nu star	246.1254	Adjusted Gamma UCL	25.0188
Approx.Chi Square Value (.05)	210.7962		
Adjusted Level of Significance	0.0416	Lognormal Distribution Test	
Adjusted Chi Square Value	209.0493	Shapiro-Wilk Test Statisitic	0.956994
		Shapiro-Wilk 5% Critical Value	0.93
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	1.94591		
Maximum of log data	3.806662	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.933236	95% H-UCL	25.68423
Standard Deviation of log data	0.515923	95% Chebyshev (MVUE) UCL	30.26102
Variance of log data	0.266177	97.5% Chebyshev (MVUE) UCL	34.11115
		99% Chebyshev (MVUE) UCL	41.67397
		95% Non-parametric UCLs	
		CLT UCL	24.29964
		Adj-CLT UCL (Adjusted for skewness)	24.53127
		Mod-t UCL (Adjusted for skewness)	24.4297
		Jackknife UCL	24.39358
		Standard Bootstrap UCL	24.25205
		Bootstrap-t UCL	24.62412
RECOMMENDATION		Hall's Bootstrap UCL	24.43784
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	24.28125
		BCA Bootstrap UCL	24.34375
Use Ap		95% Chebyshev (Mean, Sd) UCL	29.33161
		97.5% Chebyshev (Mean, Sd) UCL	32.82854
		99% Chebyshev (Mean, Sd) UCL	39.69756

Lead - Mineral Processing Area

		Variable: lead	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	32	Shapiro-Wilk Test Statisitic	0.888673
Number of Unique Samples	25	Shapiro-Wilk 5% Critical Value	0.93
Minimum	39	Data not normal at 5% significance level	
Maximum	400		
Mean	174.0938	95% UCL (Assuming Normal Distribution)	
Median	140	Student's-t UCL	203.1099
Standard Deviation	96.80821		
Variance	9371.83	Gamma Distribution Test	
Coefficient of Variation	0.556069	A-D Test Statistic	0.69673
Skewness	0.862225	A-D 5% Critical Value	0.751954
		K-S Test Statistic	0.119059
Gamma Statistics		K-S 5% Critical Value	0.156378
k hat	3.4506	Data follow gamma distribution	
k star (bias corrected)	3.147939	at 5% significance level	
Theta hat	50.45318		
Theta star	55.30403	95% UCLs (Assuming Gamma Distribution)	
nu hat	220.8384	Approxi	206.7823
nu star	201.4681	Adjusted Gamma UCL	208.7041
Approx.Chi Square Value (.05)	169.6196		
Adjusted Level of Significance	0.0416	Lognormal Distribution Test	
Adjusted Chi Square Value	168.0578	Shapiro-Wilk Test Statisitic	0.944139
		Shapiro-Wilk 5% Critical Value	0.93
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	3.663562		
Maximum of log data	5.991465	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.007749	95% H-UCL	216.642
Standard Deviation of log data	0.575131	95% Chebyshev (MVUE) UCL	257.7052
Variance of log data	0.330775	97.5% Chebyshev (MVUE) UCL	293.3088
		99% Chebyshev (MVUE) UCL	363.2451
		95% Non-parametric UCLs	
		CLT UCL	202.2428
		Adj-CLT UCL (Adjusted for skewness)	205.03
		Mod-t UCL (Adjusted for skewness)	203.5446
		Jackknife UCL	203.1099
		Standard Bootstrap UCL	202.034
		Bootstrap-t UCL	205.204
RECOMMENDATION		Hall's Bootstrap UCL	204.5304
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	201.3438
		BCA Bootstrap UCL	204.1563
Use Ap		95% Chebyshev (Mean, Sd) UCL	248.6895
		97.5% Chebyshev (Mean, Sd) UCL	280.9671
		99% Chebyshev (Mean, Sd) UCL	344.3703

Sheet 3
Zinc - Mineral Processing Area

		Variable:	zinc
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	32	Shapiro-Wilk Test Statisitic	0.897819
Number of Unique Samples	26	Shapiro-Wilk 5% Critical Value	0.93
Minimum	70	Data not normal at 5% significance level	
Maximum	720		
Mean	303.75	95% UCL (Assuming Normal Distribution)	
Median	245	Student's-t UCL	354.4486
Standard Deviation	169.1487		
Variance	28611.29	Gamma Distribution Test	
Coefficient of Variation	0.556868	A-D Test Statistic	0.408481
Skewness	1.016127	A-D 5% Critical Value	0.751843
		K-S Test Statistic	0.103262
Gamma Statistics		K-S 5% Critical Value	0.156358
k hat	3.501957	Data follow gamma distribution	
k star (bias corrected)	3.194482	at 5% significance level	
Theta hat	86.73722		
Theta star	95.08585	95% UCLs (Assuming Gamma Distribution)	
nu hat	224.1252	Approxi	360.3075
nu star	204.4468	Adjusted Gamma UCL	363.6299
Approx.Chi Square Value (.05)	172.3548		
Adjusted Level of Significance	0.0416	Lognormal Distribution Test	
Adjusted Chi Square Value	170.78	Shapiro-Wilk Test Statisitic	0.967053
		Shapiro-Wilk 5% Critical Value	0.93
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	4.248495		
Maximum of log data	6.579251	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.566686	95% H-UCL	376.9414
Standard Deviation of log data	0.570112	95% Chebyshev (MVUE) UCL	448.0584
Variance of log data	0.325028	97.5% Chebyshev (MVUE) UCL	509.5545
		99% Chebyshev (MVUE) UCL	630.3515
		95% Non-parametric UCLs	
		CLT UCL	352.9337
		Adj-CLT UCL (Adjusted for skewness)	358.6728
		Mod-t UCL (Adjusted for skewness)	355.3438
		Jackknife UCL	354.4486
		Standard Bootstrap UCL	351.9343
		Bootstrap-t UCL	366.2587
RECOMMENDATION		Hall's Bootstrap UCL	361.5572
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	355.3125
		BCA Bootstrap UCL	358.125
Use Ap		95% Chebyshev (Mean, Sd) UCL	434.0878
		97.5% Chebyshev (Mean, Sd) UCL	490.4851
		99% Chebyshev (Mean, Sd) UCL	601.2667

Arsenic - Open Space and Residential

		Variable:	Arsenic
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	74	Lilliefors Test Statisitic	0.362539
Number of Unique Samples	16	Lilliefors 5% Critical Value	0.102995
Minimum	0	Data not normal at 5% significance level	
Maximum	130		
Mean	8.608108	95% UCL (Assuming Normal Distribution)	
Median	5	Student's-t UCL	12.33832
Standard Deviation	19.26087		
Variance	370.9813		
Coefficient of Variation	2.237527		
Skewness	5.562757		
Gamma Statistics Not Available			
Lognormal Statistics Not Available			
		95% Non-parametric UCLs	
		CLT UCL	12.29099
		Adj-CLT UCL (Adjusted for skewness)	13.83807
		Mod-t UCL (Adjusted for skewness)	12.57964
		Jackknife UCL	12.33832
		Standard Bootstrap UCL	12.21919
		Bootstrap-t UCL	23.7493
RECOMMENDATION		Hall's Bootstrap UCL	32.93977
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	12.7973
		BCA Bootstrap UCL	14.16216
Use 95'		95% Ch	18.36782
		97.5% Chebyshev (Mean, Sd) UCL	22.59085
		99% Chebyshev (Mean, Sd) UCL	30.88619

		Variable:	Cadmium	
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	74	Lilliefors Test Statisitic		0.396294
Number of Unique Samples	9	Lilliefors 5% Critical Value		0.102995
Minimum	0	Data not normal at 5% significance level		
Maximum	2.1			
Mean	0.167703	95% UCL (Assuming Normal Distribution)		
Median	0	Student's-t UCL		0.231883
Standard Deviation	0.331392			
Variance	0.109821			
Coefficient of Variation	1.976069			
Skewness	3.238833			
Gamma Statistics Not Available				
Lognormal Statistics Not Available				
		95% Non-parametric UCLs		
		CLT UCL		0.231068
		Adj-CLT UCL (Adjusted for skewness)		0.246566
		Mod-t UCL (Adjusted for skewness)		0.2343
		Jackknife UCL		0.231883
		Standard Bootstrap UCL		0.231923
		Bootstrap-t UCL		0.259945
RECOMMENDATION		Hall's Bootstrap UCL		0.281695
Data are Non-parametric (0.05)		Percentile Bootstrap UCL		0.233919
		BCA Bootstrap UCL		0.243378
Use 95'		95% Ch		0.335623
		97.5% Chebyshev (Mean, Sd) UCL		0.408282
		99% Chebyshev (Mean, Sd) UCL		0.551007

Chromium - Open Space and Residential

				Variable:	Chromium (III+VI)	
Raw Statistics		Normal Distribution Test				
Number of Valid Samples	74	Lilliefors Test Statisitic				0.148827
Number of Unique Samples	18	Lilliefors 5% Critical Value				0.102995
Minimum	9.6	Data not normal at 5% significance level				
Maximum	37					
Mean	18.44054	95% UCL (Assuming Normal Distribution)				
Median	18	Student				19.2404
Standard Deviation	4.130074					
Variance	17.05751	Gamma Distribution Test				
Coefficient of Variation	0.223967	A-D Test Statistic				1.092914
Skewness	1.554886	A-D 5% Critical Value				0.749714
		K-S Test Statistic				0.118417
Gamma Statistics		K-S 5% Critical Value				0.103454
k hat	22.63713	Data do not follow gamma distribution				
k star (bias corrected)	21.72842	at 5% significance level				
Theta hat	0.814615					
Theta star	0.848683	95% UCLs (Assuming Gamma Distribution)				
nu hat	3350.295	Approximate Gamma UCL				19.22236
nu star	3215.806	Adjusted Gamma UCL				19.23807
Approx.Chi Square Value (.05)	3085.012					
Adjusted Level of Significance	0.046757	Lognormal Distribution Test				
Adjusted Chi Square Value	3082.493	Lilliefors Test Statisitic				0.104269
		Lilliefors 5% Critical Value				0.102995
Log-transformed Statistics		Data not lognormal at 5% significance level				
Minimum of log data	2.261763					
Maximum of log data	3.610918	95% UCLs (Assuming Lognormal Distribution)				
Mean of log data	2.892301	95% H-UCL				19.22066
Standard Deviation of log data	0.209141	95% Chebyshev (MVUE) UCL				20.39981
Variance of log data	0.04374	97.5% Chebyshev (MVUE) UCL				21.25302
		99% Chebyshev (MVUE) UCL				22.929
		95% Non-parametric UCLs				
		CLT UCL				19.23025
		Adj-CLT UCL (Adjusted for skewness)				19.32298
		Mod-t U				19.25487
		Jackknife UCL				19.2404
		Standard Bootstrap UCL				19.23008
		Bootstrap-t UCL				19.35333
RECOMMENDATION		Hall's Bootstrap UCL				19.34541
Data are Non-parametric (0.05)		Percentile Bootstrap UCL				19.29189
		BCA Bootstrap UCL				19.2973
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL				20.5333
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL				21.43884
		99% Chebyshev (Mean, Sd) UCL				23.21759

Sheet 7
Copper - Open Space and Residential

		Variable:	Copper	
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	74	Lilliefors Test Statisitic		0.153724
Number of Unique Samples	42	Lilliefors 5% Critical Value		0.102995
Minimum	1	Data not normal at 5% significance level		
Maximum	40			
Mean	13.37162	95% UCL (Assuming Normal Distribution)		
Median	11.5	Student's-t UCL		14.82235
Standard Deviation	7.490808			
Variance	56.1122	Gamma Distribution Test		
Coefficient of Variation	0.560202	A-D Test Statistic		0.508183
Skewness	1.539885	A-D 5% Critical Value		0.756869
		K-S Test Statistic		0.089352
Gamma Statistics		K-S 5% Critical Value		0.104322
k hat	3.547802	Data follow gamma distribution		
k star (bias corrected)	3.412981	at 5% significance level		
Theta hat	3.768988			
Theta star	3.917872	95% UCLs (Assuming Gamma Distribution)		
nu hat	525.0747	Approxi		14.87757
nu star	505.1212	Adjusted Gamma UCL		14.90894
Approx.Chi Square Value (.05)	453.9915			
Adjusted Level of Significance	0.046757	Lognormal Distribution Test		
Adjusted Chi Square Value	453.0361	Lilliefors Test Statisitic		0.075033
		Lilliefors 5% Critical Value		0.102995
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	0			
Maximum of log data	3.688879	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	2.445632	95% H-UCL		15.4661
Standard Deviation of log data	0.575124	95% Chebyshev (MVUE) UCL		17.81117
Variance of log data	0.330768	97.5% Chebyshev (MVUE) UCL		19.643
		99% Chebyshev (MVUE) UCL		23.24128
		95% Non-parametric UCLs		
		CLT UCL		14.80394
		Adj-CLT UCL (Adjusted for skewness)		14.9705
		Mod-t UCL (Adjusted for skewness)		14.84833
		Jackknife UCL		14.82235
		Standard Bootstrap UCL		14.78501
		Bootstrap-t UCL		15.09087
RECOMMENDATION		Hall's Bootstrap UCL		15.08804
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL		14.87297
		BCA Bootstrap UCL		15.0027
Use Ap		95% Chebyshev (Mean, Sd) UCL		17.1673
		97.5% Chebyshev (Mean, Sd) UCL		18.8097
		99% Chebyshev (Mean, Sd) UCL		22.03586

Sheet 8
Lead - Open Space and Residential

		Variable:	Lead
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	74	Lilliefors Test Statisitic	0.298953
Number of Unique Samples	36	Lilliefors 5% Critical Value	0.102995
Minimum	3	Data not normal at 5% significance level	
Maximum	280		
Mean	26.16351	95% UCL (Assuming Normal Distribution)	
Median	13	Student's-t UCL	33.79417
Standard Deviation	39.40069		
Variance	1552.414	Gamma Distribution Test	
Coefficient of Variation	1.50594	A-D Test Statistic	4.011211
Skewness	4.261328	A-D 5% Critical Value	0.779716
		K-S Test Statistic	0.200157
Gamma Statistics		K-S 5% Critical Value	0.106664
k hat	1.058274	Data do not follow gamma distribution	
k star (bias corrected)	1.02438	at 5% significance level	
Theta hat	24.72281		
Theta star	25.54082	95% UCLs (Assuming Gamma Distribution)	
nu hat	156.6246	Approximate Gamma UCL	31.95215
nu star	151.6083	Adjusted Gamma UCL	32.07911
Approx.Chi Square Value (.05)	124.1421		
Adjusted Level of Significance	0.046757	Lognormal Distribution Test	
Adjusted Chi Square Value	123.6508	Lilliefors Test Statisitic	0.12746
		Lilliefors 5% Critical Value	0.102995
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.098612		
Maximum of log data	5.63479	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.722489	95% H-UCL	30.22804
Standard Deviation of log data	0.942839	95% Chebyshev (MVUE) UCL	36.71513
Variance of log data	0.888946	97.5% Chebyshev (MVUE) UCL	42.41877
		99% Chebyshev (MVUE) UCL	53.62248
		95% Non-parametric UCLs	
		CLT UCL	33.69733
		Adj-CLT UCL (Adjusted for skewness)	36.12169
		Mod-t UCL (Adjusted for skewness)	34.17232
		Jackknife UCL	33.79417
		Standard Bootstrap UCL	33.86278
		Bootstrap-t UCL	38.37111
RECOMMENDATION		Hall's Bootstrap UCL	62.24422
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	34.23784
		BCA Bootstrap UCL	36.82568
Use 95'		95% Ch	46.1283
		97.5% Chebyshev (Mean, Sd) UCL	54.76708
		99% Chebyshev (Mean, Sd) UCL	71.73629

Nickle - Open Space and Residential

		Variable:	Nickel
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	74	Lilliefors Test Statisitic	0.109986
Number of Unique Samples	25	Lilliefors 5% Critical Value	0.102995
Minimum	4.3	Data not normal at 5% significance level	
Maximum	32		
Mean	17.88784	95% UCL (Assuming Normal Distribution)	
Median	18	Student's-t UCL	19.03003
Standard Deviation	5.897688		
Variance	34.78273	Gamma Distribution Test	
Coefficient of Variation	0.329704	A-D Test Statistic	0.453862
Skewness	0.332456	A-D 5% Critical Value	0.751523
		K-S Test Statistic	0.084456
Gamma Statistics		K-S 5% Critical Value	0.103769
k hat	8.756404	Data follow gamma distribution	
k star (bias corrected)	8.410424	at 5% significance level	
Theta hat	2.042829		
Theta star	2.126865	95% UCLs (Assuming Gamma Distribution)	
nu hat	1295.948	Approxi	19.1318
nu star	1244.743	Adjusted Gamma UCL	19.15716
Approx.Chi Square Value (.05)	1163.809		
Adjusted Level of Significance	0.046757	Lognormal Distribution Test	
Adjusted Chi Square Value	1162.268	Lilliefors Test Statisitic	0.08524
		Lilliefors 5% Critical Value	0.102995
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	1.458615		
Maximum of log data	3.465736	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.825935	95% H-UCL	19.36161
Standard Deviation of log data	0.356455	95% Chebyshev (MVUE) UCL	21.30274
Variance of log data	0.12706	97.5% Chebyshev (MVUE) UCL	22.74599
		99% Chebyshev (MVUE) UCL	25.58096
		95% Non-parametric UCLs	
		CLT UCL	19.01554
		Adj-CLT UCL (Adjusted for skewness)	19.04385
		Mod-t UCL (Adjusted for skewness)	19.03445
		Jackknife UCL	19.03003
		Standard Bootstrap UCL	19.02987
		Bootstrap-t UCL	19.13127
RECOMMENDATION		Hall's Bootstrap UCL	19.09223
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	19.03649
		BCA Bootstrap UCL	19.00946
Use Ap		95% Chebyshev (Mean, Sd) UCL	20.87627
		97.5% Chebyshev (Mean, Sd) UCL	22.16936
		99% Chebyshev (Mean, Sd) UCL	24.7094

Sheet 10
Zinc - Open Space and Residential

		Variable:	Zinc
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	74	Lilliefors Test Statisitic	0.357806
Number of Unique Samples	50	Lilliefors 5% Critical Value	0.102995
Minimum	17	Data not normal at 5% significance level	
Maximum	1100		
Mean	82	95% UCL (Assuming Normal Distribution)	
Median	49.5	Student's-t UCL	109.6587
Standard Deviation	142.8151		
Variance	20396.16	Gamma Distribution Test	
Coefficient of Variation	1.741648	A-D Test Statistic	5.340801
Skewness	5.60261	A-D 5% Critical Value	0.776129
		K-S Test Statistic	0.268704
Gamma Statistics		K-S 5% Critical Value	0.106319
k hat	1.212823	Data do not follow gamma distribution	
k star (bias corrected)	1.172663	at 5% significance level	
Theta hat	67.61087		
Theta star	69.9263	95% UCLs (Assuming Gamma Distribution)	
nu hat	179.4978	Approximate Gamma UCL	98.77343
nu star	173.5541	Adjusted Gamma UCL	99.13854
Approx.Chi Square Value (.05)	144.0817		
Adjusted Level of Significance	0.046757	Lognormal Distribution Test	
Adjusted Chi Square Value	143.551	Lilliefors Test Statisitic	0.175083
		Lilliefors 5% Critical Value	0.102995
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	2.833213		
Maximum of log data	7.003065	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.94086	95% H-UCL	86.25113
Standard Deviation of log data	0.802654	95% Chebyshev (MVUE) UCL	103.0633
Variance of log data	0.644253	97.5% Chebyshev (MVUE) UCL	117.1019
		99% Chebyshev (MVUE) UCL	144.678
		95% Non-parametric UCLs	
		CLT UCL	109.3077
		Adj-CLT UCL (Adjusted for skewness)	120.8612
		Mod-t UCL (Adjusted for skewness)	111.4608
		Jackknife UCL	109.6587
		Standard Bootstrap UCL	109.8095
		Bootstrap-t UCL	144.3111
RECOMMENDATION		Hall's Bootstrap UCL	204.4197
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	110.9595
		BCA Bootstrap UCL	125.7703
Use 95		95% Ch	154.3661
		97.5% Chebyshev (Mean, Sd) UCL	185.679
		99% Chebyshev (Mean, Sd) UCL	247.187

Appendix D

Historical Aerial Photographs

Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: Peet Limited		TITLE:	Aerial Photograph 1961
OFFICE: Canberra	DRAWN BY: SDG		Updated Contamination Assessment
SCALE: NTS	DATE: 13.08.2020		Jumping Creek Estate, Ellerton Drive, Queanbeyan

N

PROJECT No:	88224.06
PLATE No:	D1
REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Aerial Photograph 1968** **Updated Contamination Assessment** **Jumping Creek Estate, Ellerton Drive, Queanbeyan**
	OFFICE: Canberra	DRAWN BY: SDG	
	SCALE: NTS	DATE: 13.08.2020	

PROJECT No:	88224.06
PLATE No:	D2
REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Aerial Photograph 1973** **Updated Contamination Assessment** **Jumping Creek Estate, Ellerton Drive, Queanbeyan**	N	PROJECT No: 88224.06
	OFFICE: Canberra	DRAWN BY: SDG			PLATE No: D3
	SCALE: NTS	DATE: 13.08.2020			REVISION: 0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Aerial Photograph 1978** **Updated Contamination Assessment** **Jumping Creek Estate, Ellerton Drive, Queanbeyan**
	OFFICE: Canberra	DRAWN BY: SDG	
	SCALE: NTS	DATE: 13.08.2020	

N

PROJECT No:	88224.06
PLATE No:	D4
REVISION:	0

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Peet Limited		TITLE: Aerial Photograph 1984	PROJECT No: 88224.06
OFFICE: Canberra	DRAWN BY: SDG	Updated Contamination Assessment	PLATE No: D5
SCALE: NTS	DATE: 13.08.2020	Jumping Creek Estate, Ellerton Drive, Queanbeyan	REVISION: 0

N

Douglas Partners — Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: **Aerial Photograph 1987**
	OFFICE: Canberra	DRAWN BY: SDG	**Updated Contamination Assessment**
	SCALE: NTS	DATE: 13.08.2020	**Jumping Creek Estate, Ellerton Drive, Queanbeyan**

PROJECT No:	88224.06
PLATE No:	D6
REVISION:	0

Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: Peet Limited		TITLE:	Aerial Photograph 1995
OFFICE: Canberra	DRAWN BY: SDG		Updated Contamination Assessment
SCALE: NTS	DATE: 13.08.2020		Jumping Creek Estate, Ellerton Drive, Queanbeyan

N

PROJECT No:	88224.06
PLATE No:	D7
REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: Aerial Photograph 1998	N	PROJECT No: 88224.06
	OFFICE: Canberra	DRAWN BY: SDG	Updated Contamination Assessment		PLATE No: D8
	SCALE: NTS	DATE: 13.08.2020	Jumping Creek Estate, Ellerton Drive, Queanbeyan		REVISION: 0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: Aerial Photograph 2004 Updated Contamination Assessment Jumping Creek Estate, Ellerton Drive, Queanbeyan
	OFFICE: Canberra	DRAWN BY: SDG	
	SCALE: NTS	DATE: 13.08.2020	

PROJECT No:	88224.06
PLATE No:	D9
REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Peet Limited		TITLE: Aerial Photograph 2018	PROJECT No: 88224.06
	OFFICE: Canberra	DRAWN BY: SDG	Updated Contamination Assessment	PLATE No: D10
	SCALE: NTS	DATE: 13.08.2020	Jumping Creek Estate, Ellerton Drive, Queanbeyan	REVISION: 0

Appendix E

Site Photographs

Photo 1: View of the site from the east looking north-west over northern part of development

Photo 2: View of the site from Mine Site 4 looking towards the North

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**		PROJECT:	88224.06
	Jumping Creek Estate		Plate	1
	Creek, Lot 1 DP 1249543, NSW		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 3: View of the site from the west looking north-east over northern part ofdevelopment

Photo 4: View of the site from the east looking south over eastern part of development

Douglas Partners Geotechnics / Environment / Groundwater	Site Photographs		PROJECT:	88224.06
	Jumping Creek Estate		Plate	2
	Creek, Lot 1 DP 1249543, NSW		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 5: View of the sheep dip area looking north

Photo 6: View of sheep dip area, showing waste material, looking south

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**		PROJECT:	88224.06
	Jumping Creek Estate		Plate	3
	Creek, Lot 1 DP 1249543, NSW		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 7: View of shaft at Mine site 1, looking to the south

Photo 8: View of shaft and stockpiled spoil at Mine Site 1, looking west

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**		PROJECT:	88224.06
	Jumping Creek Estate		Plate	4
	Creek, Lot 1 DP 1249543, NSW		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 9: View of typical waste material encountered during inspection

Photo 10: View of limestone quarry in the south-east of the site, looking south

Douglas Partners Geotechnics / Environment / Groundwater	Site Photographs		PROJECT:	88224.06
	Jumping Creek Estate		Plate	5
	Creek, Lot 1 DP 1249543, NSW		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 11: View of the site to the north-west, from the limestone quarry

Photo 12: View of stockpiled spoil to the north-west of the limestone quarry

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	88224.06
	Jumping Creek Estate	Plate	6
	Creek, Lot 1 DP 1249543, NSW	REV:	A
	Client: PEET Limited	DATE:	19-Aug-20

Photo 13: View of the kiln area looking to the north-east

Photo 14: View of Mine Site 4 looking to the north, open pits in the foreground

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	88224.06
	Jumping Creek Estate	Plate	7
	Creek, Lot 1 DP 1249543, NSW	REV:	A
	Client: PEET Limited	DATE:	19-Aug-20

Photo 15: View of Mine Site 4, open trench excavation

Photo 16: View of Mine Site 4, stockpiled spoil

Photo 17: View of Mine Site 4, stockpiled spoil

Photo 18: View of Mine Site 4, stockpiled spoil

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**		PROJECT:	88224.06
	Jumping Creek Estate		Plate	9
	Creek, Lot 1 DP 1249543, NSW		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 19: View of Mine Site 4, open trench excavation, above adit entrance

Photo 20: View of Mine Site 4 , adit entrance, looking to the west

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**		PROJECT:	88224.06
	Jumping Creek Estate		Plate	10
	Creek, Lot 1 DP 1249543, NSW		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 21: View of Mine Site 4, open cut excavation area

Photo 22: View of Mineral Processing area, scattered building rubble

Photo 23: View of Mineral Processing area, scattered building rubble

Photo 24: View of Mineral Processing area, example of concrete troughs

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**		PROJECT:	88224.06
	Jumping Creek Estate		Plate	12
	Lot 1 DP 1249543, Greenleigh		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 25: View of Mineral Processing area, remnant buildings

Photo 26: View of Mine Site 3 open shaft, looking to the south

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**		PROJECT:	88224.06
	Jumping Creek Estate		Plate	13
	Lot 1 DP 1249543, Greenleigh		REV:	A
	Client	PEET Limited	DATE:	19-Aug-20

Photo 27: View of Mine Site 3, open shaft, looking to the north-west

Photo 28: View of additional mine shaft in north-west of the site, in north-west of the development

Photo 29: View of additional mine shaft in north-west of the site, in north-west of the development

Photo 30: View of quarry area to south-east of additional mine shaft

Photo 31: View of quarry area to south-east of additional mine shaft

Photo 32: View of the site from north-west looking to the east over development area

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	88224.06
	Jumping Creek Estate	Plate	16
	Lot 1 DP 1249543, Greenleigh	REV:	A
	Client PEET Limited	DATE:	19-Aug-20

Photo 33: View of Valley Creek bed

Photo 34: View of Valley Creek bed

Photo 35: View of example car bodies scattered across the site

Photo 36: View of small stockpile in east of the site containing asbestos material

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	88224.06
	Jumping Creek Estate	Plate	18
	Lot 1 DP 1249543, Greenleigh	REV:	A
	Client: PEET Limited	DATE:	19-Aug-20

Appendix F

Queanbeyan Palerang Regional Council Correspondence

QPRC

Application No: 109-2019

16 June 2019

Spacelab
5/97 Northbourne Ave
Turner ACT 2612

Additional Information Required Before Determining Application

Dear Sir/Madam

Development Application No. 109-2019
For land at
LOT 5 DP 1199045, 28 LONERGAN DRIVE GREENLEIGH NSW 2620

I refer to the Development Application for the subject premises and advise that assessment of the proposed development reveals that inadequate details or information has been submitted.

Therefore, pursuant to clause 54 of the Environmental Planning and Assessment Regulation 2000, the following information is required to enable further consideration.

1. Contamination Assessment

While it is noted that numerous studies have previously been undertaken in relation to contamination upon the site, the documentation accompanying the subject application identifies a number of sources of potential contamination that have not been identified within previous studies including the additional mine site found in the north-western part of the site as identified within the Douglas Partners Report and JCH 5, JCH 6 and JCH 13 identified within the Cultural Heritage Assessment Prepared by Navin Officer.

To resolve this issue please provide a single Detailed Site Investigation for the entirety site including a site specific health risk assessment and intrusive assessment of the additional mine site found in the north-western part of the site as identified within the Douglas Partners Report and JCH 5, JCH 6 and JCH 13 identified within the Cultural Heritage Assessment Prepared by Navin Officer. Such a report should also provide comment on the suitability of the site for the proposed residential and recreational uses of the site in recognition of the known contamination upon the site.

Further, given the scope of contamination upon the site, concerns are also held in relation to the lack of certainty regarding the extent of works required and necessary ongoing management commitments involved in achieving the required level of site remediation and there compatibility with the proposed works. As such it is consider necessary that this matter is addressed prior to the determination of the subject application. Accordingly, please provide a single consolidated Remediation Action Plan outlining the necessary actions to remediate and or manage all areas of potential contamination identified within the Detailed Site Investigation. To avoid confusion it should be noted that the Remediation Action Plan submitted to date captures only a small portion of the site and as such is not sufficient for the purposes of the subject application.

It should also be noted that Council will require the applicant to engage the services of an accredited Site Auditor to prepare a Site Audit Report and Site Audit Statement for the development. NSW EPA accredited site auditors are engaged independently to review work of contaminated land consultants, to ensure work has been undertaken in accordance with regulations and guidelines, and to provide validation with a site audit statement on completion. It is recommended this action be undertaken as a priority as the Site Auditor may require additional matters to be considered as part of the detailed contaminated site assessment and any subsequent Remedial Action Plan.
https://www.epa.nsw.gov.au/your-environment/contaminated-land/site-auditor-scheme/accredited-site-auditors

2. **Fire Trail/ Access Track**

Council's Service Manager Urban Landscapes has advised that in recognition of the unnecessary management burden Council is not willing to except the dedication of the proposed fire trail / access track linking the cul-de-sac of Road 4 to Road 1. As such, please provide amending plans deleting this track. This should be taken into consideration in requesting the request for additional information from the NSW Rural Fire Service.

3. **European Heritage**

Council's Heritage Advisor has reviewed the Cultural Heritage Assessment Prepared by Navin Officer and has advised that JCH 5 and 6 consisting of a lime quarry and kiln are of sufficient heritage value as to warrant retention. Given the location of these site's within the proposed open space area, retention is consider to be appropriate. To resolve this issue please provide amended landscape plans demonstrating the retention of JCH 5 and 6.

Council's Heritage Advisor has also raised concern in relation to the proximity of Road 12 and the associated earthworks upon the local listed heritage item A2 – Marchiori's Lime Kiln and Quarry specifically the Lime Kiln. He has further noted that sufficient curtilage should be retained surrounding the kiln as to allow for the interpretation of the operation of the kiln which involved material being dropped off from above the kiln and the resultant material being collected from below. As such, it is requested that a detail be provided demonstrating the proximity of proposed road 12 and associated retaining/ earthworks to the kiln structure.

4. **Local Planning Agreement**

   As advised throughout previous conversations, the proposed Local Planning Agreement is required to be in place prior to the determination of the subject development application. Please continue to liaise with Council's Land Use Planning team regarding the requirements to complete this process.

5. **Flora and Fauna (Biodiversity & Conservation Division)**

   Following on from previous conversations regarding the adequacy of the Biodiversity Development Assessment Report and vegetation disturbance calculations Council has received advice from BCD in relation to the discrepancy in area calculations. It appears the BCD has included the residue land and the area outside of building envelopes on the large lots as "land impacted through future uses". Council acknowledges your comments regarding the future management of the residue lot by Council. Nonetheless, consideration does need to be given to potential impacts of ancillary uses outside of the proposed building envelopes upon the proposed the large lots.

6. **Bushfire – (NSW Rural Fire Service)**

   The NSW Rural Fire Service request for additional information dated 24 March 2020 (attached) remains outstanding.

As matters raised within Council's previous correspondence remain outstanding the subject application remains on Stop the Clock until such time that all information is received and matters are addressed.

Should you have any questions please contact Luke Perkins of Council's Environment, Planning and Development Section on 1300 735 025.

Yours faithfully

M J Thompson
General Manager
Natural Built Character

Per: Luke Perkins

Appendix G

Laboratory Certificates of Analysis and Chain of Custody Documentation

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project Name: JUMPING CREEK
Project No: 88224.07 DP Order No:
DP Contact Person: PETER STOREY
Prior Storage: esky / fridge / shelved (circle)

To: Envirolab Services Pty Ltd
12 Ashley Street
CHATSWOOD NSW 2067
Ph: (02) 9910 6200
Attn: Jacinta Hurst

Sample ID	Date Sampled	Sample Type S-soil W-water	Lab ID	Analytes: pH	CEC	Clay Content		METALS									TCLP	Notes
ASM1	21/7	S	1					X										
ASM2			2															
ASM3			3															
ASM4			4															
JCH5-1			5															
JCH5-2			6															
JCH13-1			7															
JCH13-2			8															
JCH13-3			9															
JCH13-4			10															
QC-ASM			11															
QC-JCH			12															
PQL (S)		mg/kg																
PQL (W)		mg/L																

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 247524
Date Received: 22.7.20
Time Received: 1736
Received By: MO
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit *As per Laboratory Method (Detection Limit)
# - Metals to Analyse (Please circle): As Cd Cr Cu Pb Zn Hg Ni Mn Fe
Date relinquished: 21/7/20
Total number of samples in container: 12
Results required by:
TAT (Circle): Standard 72 hr 48hr 24hr

SAMPLES RECEIVED
Please sign and date to acknowledge receipt of samples and return by fax
Signature:
Date: 22.7.20 Lab Ref: 247524

Send results to:
Douglas Partners Pty Ltd
Address:
PO BOX 1487 FYSHWICK
ACT 2609
Fax: (02) 6260 1147

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	Douglas Partners Canberra
Attention	Peter Storey

Sample Login Details	
Your reference	88224.06, Jumping Creek
Envirolab Reference	247524
Date Sample Received	22/07/2020
Date Instructions Received	22/07/2020
Date Results Expected to be Reported	29/07/2020

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	12 SOIL
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8.4
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	Acid Extractable metalsin soil
ASM1	✓
ASM2	✓
ASM3	✓
ASM4	✓
JCH5-1	✓
JCH5-2	✓
JCH13-1	✓
JCH13-2	✓
JCH13-3	✓
JCH13-4	✓
QC-ASM	✓
QC-JCH	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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

CERTIFICATE OF ANALYSIS 247524

Client Details

Client	Douglas Partners Canberra
Attention	Peter Storey
Address	PO Box 1487, Fyshwick, ACT, 2609

Sample Details

Your Reference	**88224.06, Jumping Creek**
Number of Samples	12 SOIL
Date samples received	22/07/2020
Date completed instructions received	22/07/2020

Analysis Details

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

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	29/07/2020
Date of Issue	28/07/2020

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Results Approved By
Hannah Nguyen, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Acid Extractable metals in soil						
Our Reference		247524-1	247524-2	247524-3	247524-4	247524-5
Your Reference	UNITS	ASM1	ASM2	ASM3	ASM4	JCH5-1
Date Sampled		21/07/2020	21/07/2020	21/07/2020	21/07/2020	21/07/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	78	<4	<4	9	17
Cadmium	mg/kg	38	2	2	0.5	0.6
Chromium	mg/kg	14	8	11	23	<1
Copper	mg/kg	85	9	8	14	<1
Lead	mg/kg	3,300	65	140	48	17
Mercury	mg/kg	1	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	51	9	12	19	2
Zinc	mg/kg	9,000	830	1,100	360	84

Acid Extractable metals in soil						
Our Reference		247524-6	247524-7	247524-8	247524-9	247524-10
Your Reference	UNITS	JCH5-2	JCH13-1	JCH13-2	JCH13-3	JCH13-4
Date Sampled		21/07/2020	21/07/2020	21/07/2020	21/07/2020	21/07/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	15	10	10	12	10
Cadmium	mg/kg	2	<0.4	<0.4	<0.4	0.5
Chromium	mg/kg	27	40	34	41	26
Copper	mg/kg	27	7	3	7	3
Lead	mg/kg	510	12	3	9	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	29	21	17	20	15
Zinc	mg/kg	1,600	51	41	34	57

Acid Extractable metals in soil					
Our Reference		247524-11	247524-12	247524-13	247524-14
Your Reference	UNITS	QC-ASM	QC-JCH	ASM1 - [TRIPLICATE]	QC-ASM - [TRIPLICATE]
Date Sampled		21/07/2020	21/07/2020	21/07/2020	21/07/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	<4	9	27	5
Cadmium	mg/kg	2	<0.4	8.2	4.3
Chromium	mg/kg	4	45	17	11
Copper	mg/kg	5	7	30	13
Lead	mg/kg	19	8	1,300	180
Mercury	mg/kg	<0.1	<0.1	0.6	<0.1
Nickel	mg/kg	4	21	36	15
Zinc	mg/kg	530	53	6,100	1,600

Moisture						
Our Reference		247524-1	247524-2	247524-3	247524-4	247524-5
Your Reference	UNITS	ASM1	ASM2	ASM3	ASM4	JCH5-1
Date Sampled		21/07/2020	21/07/2020	21/07/2020	21/07/2020	21/07/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	25/07/2020	25/07/2020	25/07/2020	25/07/2020	25/07/2020
Moisture	%	9.8	4.1	6.8	8.7	0.2

Moisture						
Our Reference		247524-6	247524-7	247524-8	247524-9	247524-10
Your Reference	UNITS	JCH5-2	JCH13-1	JCH13-2	JCH13-3	JCH13-4
Date Sampled		21/07/2020	21/07/2020	21/07/2020	21/07/2020	21/07/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	25/07/2020	25/07/2020	25/07/2020	25/07/2020	25/07/2020
Moisture	%	14	15	7.9	15	13

Moisture			
Our Reference		247524-11	247524-12
Your Reference	UNITS	QC-ASM	QC-JCH
Date Sampled		21/07/2020	21/07/2020
Type of sample		SOIL	SOIL
Date prepared	-	24/07/2020	24/07/2020
Date analysed	-	25/07/2020	25/07/2020
Moisture	%	3.9	14

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	247524-2
Date prepared	-			24/07/2020	1	24/07/2020	24/07/2020		24/07/2020	24/07/2020
Date analysed	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Arsenic	mg/kg	4	Metals-020	<4	1	78	7	167	95	93
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	38	4.3	159	103	96
Chromium	mg/kg	1	Metals-020	<1	1	14	11	24	100	98
Copper	mg/kg	1	Metals-020	<1	1	85	15	140	102	85
Lead	mg/kg	1	Metals-020	<1	1	3300	600	138	119	#
Mercury	mg/kg	0.1	Metals-021	<0.1	1	1	0.4	86	114	103
Nickel	mg/kg	1	Metals-020	<1	1	51	18	96	106	89
Zinc	mg/kg	1	Metals-020	<1	1	9000	2900	103	104	##

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	24/07/2020	24/07/2020		[NT]	[NT]
Date analysed	-			[NT]	11	27/07/2020	27/07/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	11	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	2	4	67	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	11	4	10	86	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	11	5	10	67	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	19	59	103	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	11	4	11	93	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	11	530	1100	70	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

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

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Acid Extractable Metals in Soil:
-The laboratory RPD acceptance criteria has been exceeded for 247524-1 for As,Cd,Cu,Pb,Hg,Ni,Zn. Therefore a triplicate result has been issued as laboratory sample number 247524-13.
-The laboratory RPD acceptance criteria has been exceeded for 247524-11 for Cd,Cr,Cu,Pb,Ni,Zn. Therefore a triplicate result has been issued as laboratory sample number 247524-14.
-# Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
-## Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Andrew (Fitzy) Fitzsimons

From: Ken Nguyen
Sent: Friday, 31 July 2020 1:59 PM
To: Andrew (Fitzy) Fitzsimons
Subject: FW: Results for Registration 247524 88224.06, Jumping Creek

Follow Up Flag: Follow up
Flag Status: Flagged

247524-A
Due: 7/8/20

A job

Kind Regards,

Ken Nguyen | Customer Service / Chemist | Envirolab Services Pty Ltd
(Monday to Friday 10am to 6pm)
***Celebrating 15 years of* Great Science. Great Service.**
12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 **F** 612 9910 6201
E knguyen@envirolab.com.au | **W** www.envirolab.com.au

View reduced sampling bottle provision for PFAS in water | COVID-19 Update

From: Peter Storey <Peter.Storey@douglaspartners.com.au>
Sent: Friday, 31 July 2020 11:12 AM
To: Ken Nguyen <KNguyen@envirolab.com.au>
Subject: RE: Results for Registration 247524 88224.06, Jumping Creek

Hi Ken,

For this batch I need a couple of samples submitted for additional analysis.

Can yup ease schedule samples ASM1 (247524-1) and JCH5-2 (247524-6) for CEC, pH and clay content and sample JCH13-3 (247524-9) for pH and CEC.

Best regards,
pete

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	Douglas Partners Canberra
Attention	Peter Storey

Sample Login Details	
Your reference	88224.06, Jumping Creek
Envirolab Reference	247524-A
Date Sample Received	22/07/2020
Date Instructions Received	31/07/2020
Date Results Expected to be Reported	07/08/2020

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	12 SOIL
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8.4
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	Misc Inorg - Soil	Clay 50-120g	CEC	On Hold
ASM1	✓	✓	✓	
ASM2				✓
ASM3				✓
ASM4				✓
JCH5-1				✓
JCH5-2	✓	✓	✓	
JCH13-1				✓
JCH13-2				✓
JCH13-3	✓		✓	
JCH13-4				✓
QC-ASM				✓
QC-JCH				✓
ASM1 - [TRIPLICATE]				✓
QC-ASM - [TRIPLICATE]				✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 247524-A

Client Details	
Client	Douglas Partners Canberra
Attention	Peter Storey
Address	PO Box 1487, Fyshwick, ACT, 2609

Sample Details	
Your Reference	**88224.06, Jumping Creek**
Number of Samples	12 SOIL
Date samples received	22/07/2020
Date completed instructions received	31/07/2020

Analysis Details

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

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details	
Date results requested by	07/08/2020
Date of Issue	06/08/2020

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

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Jaimie Loa-Kum-Cheung, Metals Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil				
Our Reference		247524-A-1	247524-A-6	247524-A-9
Your Reference	UNITS	ASM1	JCH5-2	JCH13-3
Date Sampled		21/07/2020	21/07/2020	21/07/2020
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	04/08/2020	04/08/2020	04/08/2020
Date analysed	-	04/08/2020	04/08/2020	04/08/2020
pH 1:5 soil:water	pH Units	8.6	7.8	8.4

Clay 50-120g			
Our Reference		247524-A-1	247524-A-6
Your Reference	UNITS	ASM1	JCH5-2
Date Sampled		21/07/2020	21/07/2020
Type of sample		SOIL	SOIL
Date prepared	-	04/08/2020	04/08/2020
Date analysed	-	05/08/2020	05/08/2020
Clay in soils <2µm	% (w/w)	7	29

CEC				
Our Reference		247524-A-1	247524-A-6	247524-A-9
Your Reference	UNITS	ASM1	JCH5-2	JCH13-3
Date Sampled		21/07/2020	21/07/2020	21/07/2020
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020
Exchangeable Ca	meq/100g	18	9.5	41
Exchangeable K	meq/100g	0.1	0.9	0.2
Exchangeable Mg	meq/100g	0.33	1.5	0.86
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	18	12	42

Method ID	Methodology Summary
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2µm reported.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

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

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

pH
Samples were out of the recommended holding time for this analysis.

Appendix H

Data Quality Assessment

DATA QUALITY ASSESSMENT

Q1. Data Quality Objectives

The Updated Contamination Assessment was prepared with reference to the seven step data quality objective (DQO) process which is provided in Appendix B, Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure* 1999 as amended 2013 (NEPC, 2013). The DQO process is outlined as follows:

- Stating the Problem;
- Identifying the Decision;
- Identifying Inputs to the Decision;
- Defining the Boundary of the Assessment;
- Developing a Decision Rule;
- Specifying Acceptable Limits on Decision Errors; and
- Optimising the Design for Obtaining Data.

The DQOs have been addressed within the report as shown in Table Q1.

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S17 Conclusions and Recommendations
Identify Inputs to the Decision	S1 Introduction S2 Scope of Work S3 Site Identification and Description S4 Proposed Development S5 Soil Landscape, Regional Geology and Hydrogeology S6 Previous Environmental Works S7 Site History Review S10 Potential for Contamination and Areas of Environmental Concern S1 Conceptual Site Model S11 Site Assessment Criteria S10 Results of the Investigation S16 Revised Conceptual Site Model
Define the Boundary of the Assessment	S3 Site Identification and Description Drawing 1 – Appendix B
Develop a Decision Rule	S13 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S6 Previous Environmental Work S12 Field Work, Analysis and Quality Assurance/Quality

	Control S13 Site Assessment Criteria Appendix C QA/QC Procedures and Results – Sections Q2, Q3
Optimise the Design for Obtaining Data	S2 Scope of Work S11 Conceptual Site Model S12 Field Work, Analysis and Quality Assurance/Quality Control QA/QC Procedures and Results – Sections Q2, Q3

Q2. FIELD AND LABORATORY QUALITY CONTROL

The field and laboratory quality control (QC) procedures and results are summarised in Tables Q2 and Q3. Reference should be made to the fieldwork and analysis procedures in Section 12, the Coffey Stage 3 Contamination Assessment (presented in Appendix C) and the laboratory results certificates in Appendix G for further details.

Table Q2: Field QC

Item	Frequency	Acceptance Criteria	Achievement
Intra-laboratory replicates	5% primary samples	RPD <30% inorganics), <50% (organics)	yes[1]

NOTES: 1 qualitative assessment of RPD results overall; refer Section Q2.1

Table Q3: Laboratory QC

Item	Frequency	Acceptance Criteria	Achievement
Analytical laboratories used		NATA accreditation	yes
Holding times		In accordance with NEPC (2013) which references various Australian and international standards	yes
Laboratory / Reagant Blanks	1 per lab batch	<PQL	yes
Laboratory duplicates	10% primary samples	Laboratory specific [1]	
Matrix Spikes	1 per lab batch	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC, speciated phenols)	yes
Surrogate Spikes	organics by GC	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC, speciated phenols)	yes
Control Samples	1 per lab batch	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC, speciated phenols)	yes

NOTES: 1 ELS: <5xPQL – any RPD; >5xPQL – 0-50%RPD
Mgt: <10xPQL – any RPD; 10-20xPQL – 0-50%RDP; >20xPQL – 0-30%RPD

In summary, the QC data is considered to be of sufficient quality to be acceptable for the assessment.

Q2.1 Intra-Laboratory Replicates

Intra-laboratory replicates were analysed as an internal check of the reproducibility within the primary laboratory Envirolab and as a measure of consistency of sampling techniques. The comparative results of analysis between original and intra-laboratory replicate samples are summarised in Table Q4.

Note that, where both samples are below LOR/PQL the difference and RPD has been given as zero. Where one sample is reported below LOR/PQL, but a concentration is reported for the other, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample.

Table Q4: Relative Percentage Difference Results – Intra-laboratory Replicates

Lab	Sample ID	Date Sampled	Media	Units	Metals									
					As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Fe	Mn
Envirolab	QC-ASM	21/07/2020	filling	mg/kg	<4	2	4	5	19	<0.1	4	530	-	-
Envirolab	ASM20.1-0.2	21/07/2020	filling	mg/kg	<4	2	8	9	65	<0.1	9	830	-	-
Difference				mg/kg	0	0	4	4	46	0	5	300	-	-
RPD				%	0	0	67	57	110	0	77	44	-	-
Envirolab	QC-JCH	21/07/2020	filling	mg/kg	9	<0.4	45	7	8	<0.1	21	53	-	-
Envirolab	JCH13-1/0.1-0.2	21/07/2020	filling	mg/kg	10	<0.4	40	7	12	<0.1	21	51	-	-
Difference				mg/kg	1	0	5	0	4	0	0	2	-	-
RPD				%	11	0	12	0	40	0	0	4	-	-

Notes: - not applicable, not tested

The calculated RPD values were generally within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics, however, duplicate pairs for chromium, lead, copper, nickel and zinc exceeded the acceptable RPD value. Given the generally low concentrations reported, a small difference between the values reports a high RPD value. For all reported concentrations in the duplicate pairs, there were no concentrations exceeding the applicable screening criteria. Therefore it is considered that the RPD values outside of the acceptable range, do not represent a concern.

Overall, the intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

Q3. Data Quality Indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQIs):

- Completeness – a measure of the amount of usable data from a data collection activity;
- Comparability – the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness – the confidence (qualitative) of data representativeness of media present on-site;
- Precision – a measure of variability or reproducibility of data; and
- Accuracy – a measure of closeness of the data to the 'true' value.

The DQIs were assessed as outlined in the following Table Q5.

Table Q5: Data Quality Indicators

Data Quality Indicator	Method(s) of Achievement
Completeness	Planned systematic and selected target locations sampled; Preparation of field logs, sample location plan and chain of custody (COC) records; Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody; Samples analysed for contaminants of potential concern (COPC) identified in the Preliminary Conceptual Site Model (CSM); Completion of COC documentation; NATA endorsed laboratory certificates provided by the laboratory; Satisfactory frequency and results for field and laboratory QC samples as discussed in Section Q2.
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project; Works undertaken by appropriately experienced and trained DP environmental

	scientist / engineer; Use of NATA registered laboratories, Satisfactory results for field and laboratory QC samples.
Representativeness	Target media sampled; Spatial and temporal distribution of sample locations; Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQOs; Samples were extracted and analysed within holding times; Samples were analysed in accordance with the analysis request.
Precision	Acceptable RPD between original samples and replicates; Satisfactory results for all other field and laboratory QC samples.
Accuracy	Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQIs have been complied with. As such, it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

Appendix I

Ecological Investigation Limits Calculation Spreadsheet

Inputs
Select contaminant from list below
As
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Arsenic generic EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	20	40
Urban residential and open public spaces	50	100
Commercial and industrial	80	160

Inputs
Select contaminant from list below
Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%)
18
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cr III soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	140	160
Urban residential and open public spaces	270	490
Commercial and industrial	400	810

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
24
Enter soil pH (calcium chloride method) (values from 1 to 14)
8.3
Enter organic carbon content (%OC) (values from 0 to 50%)
1
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	75	90
Urban residential and open public spaces	130	230
Commercial and industrial	190	330

Inputs
Select contaminant from list below
DDT
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	DDT generic EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	3	3
Urban residential and open public spaces	180	180
Commercial and industrial	640	640

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
24
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	40	55
Urban residential and open public spaces	120	310
Commercial and industrial	210	520

Inputs
Select contaminant from list below
Pb
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Lead generic EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	110	470
Urban residential and open public spaces	270	1100
Commercial and industrial	440	1800

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
24
Enter soil pH (calcium chloride method) (values from 1 to 14)
8.3
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	110	250
Urban residential and open public spaces	340	880
Commercial and industrial	520	1300

Appendix J

Results Tables

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Table J1
Summary of Coffey DOI1 Analytical Soil Results - Metals

Sample # and Depth	Sampled Date	Coffey Sampling Rationale	Current proposed End-use	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc
			ChemName	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			PQL	3	0.3	0.3	0.5	1	0.05	0.5	0.5
			NEPM 2013 HIL-A	100	20	100	6,000	300	40	400	7,400
			NEPM 2013 HIL-C	300	90	300	17,000	600	80	1,200	30,000
			NEPM 2013 HIL-D	3,000	900	3,600	240,000	1,500	730	6,000	400,000
			NEPM 2013 EIL R/POS	100			230	1,100		310	880
			NEPM 2013 EIL C/I	160		810	330	1,800		520	1,300
AEC 2: Mine Site 3											
MS3-1_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	**1,700**	12	21	110	**1,600**	0.13	18	2,200
MS3-2_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	**1,600**	11	21	92	**1,300**	0.09	18	2,100
MS3-3_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	50	1.6	22	34	230	<0.05	20	420
MS3-3_0.5-0.6	28/07/2009	Mine Site 3	Public Open Space	47	1.4	21	38	220	<0.05	19	370
MS3-4_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	120	2.1	25	42	330	<0.05	21	470
MS3-5_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	**1,800**	13	22	92	**1,700**	0.09	19	2,300
MS3-6_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	**1,900**	13	23	100	**1,700**	0.11	20	2,300
MS3-7_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	**1,500**	23	6.7	100	**1,200**	0.12	6.1	3,500
MS3-8_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	**2,900**	47	8.1	260	**5,200**	0.11	7.4	4,500
MS3-9_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	110	2.1	24	40	280	<0.05	21	450
MS3-10_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	100	2	24	41	290	<0.05	21	450
MS3-11_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	100	0.7	13	33	280	<0.05	14	330
MS3-12_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	140	1.1	20	42	350	0.05	19	450
MS3-13_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	130	0.9	18	42	340	0.06	17	410
MS3-13_0.5-0.6	28/07/2009	Mine Site 3	Public Open Space	110	0.9	13	38	340	0.07	17	390
MS3-14_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	130	0.95	17	42	380	0.06	18	410
MS3-15_0.0-0.2	28/07/2009	Mine Site 3	Public Open Space	110	1.9	24	39	290	<0.05	21	450
MS3-15_0.5-0.6	28/07/2009	Mine Site 3	Public Open Space	82	1.6	24	36	220	<0.05	20	370
MS3-16_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	32	0.3	16	26	100	<0.05	12	100
MS3-18_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	40	0.4	18	28	120	<0.05	15	120
MS3-21_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	39	0.4	18	28	120	<0.05	14	120
MS3-23_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	27	<0.3	17	22	72	<0.05	16	110
MS3-25_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	23	<0.3	16	21	75	<0.05	15	100
MS3-27_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	22	<0.3	16	19	60	<0.05	14	100
MS3-28_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	27	<0.3	19	23	75	<0.05	17	120
MS3-30_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	28	0.3	18	23	88	<0.05	17	110
MS3-32_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	30	1.1	18	28	160	<0.05	16	290
MS3-34_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	29	0.8	18	30	150	<0.05	15	250
MS3-35_0.0-0.2	25/11/2009	Mine Site 3	Public Open Space	35	1	19	33	190	<0.05	16	300
MS3SP1	13/08/2009	Stockpile	Public Open Space	26	0.9	1.7	1.6	180	<0.05	1.3	170
MS3SP3	13/08/2009	Stockpile	Public Open Space	120	2.4	2.5	11	110	<0.05	2	450
Samples from Coffey defined Residential Areas and Drainage Channels											
RE34_0.0-0.2	27/07/2009	Residential	Public Open Space	130	0.5	20	40	85	<0.05	32	140
RE36_0.0-0.2	27/07/2009	Residential	Public Open Space	5	0.4	27	8	10	<0.05	13	43
RE37_0.0-0.2	27/07/2009	Residential	Public Open Space	8	<0.3	28	4	7	<0.05	13	34
RE38_0.0-0.2	27/07/2009	Residential	Public Open Space	<3	<0.3	19	1	3	<0.05	10	22
RE39_0.0-0.2	27/07/2009	Residential	Public Open Space	<3	<0.3	26	6	4	<0.05	21	28
RE40_0.0-0.2	27/07/2009	Residential	Public Open Space	10	0.6	23	6	11	<0.05	12	69
DC12-a	28/04/2010	DO1	Public Open Space	3	<0.3	13	10	9.7	<0.05	11	47
DC12-b	28/04/2010	DO2	Public Open Space	3	<0.3	12	9	10	<0.05	9.8	47
DC12-c	28/04/2010	DO3	Public Open Space	3	<0.3	11	7	11	<0.05	7.7	39
DC12-d	28/04/2010	DO4	Public Open Space	3	<0.3	14	10	9.9	<0.05	11	47
RE34-a	28/04/2010	DO9	Public Open Space	7	0.4	21	14	10	<0.05	21	47
RE34-b	28/04/2010	DO10	Public Open Space	6	0.4	20	16	10	<0.05	21	40
RE34-c	28/04/2010	DO11	Public Open Space	8	0.5	21	22	9.1	<0.05	22	36
RE34-d	28/04/2010	DO12	Public Open Space	7	0.5	20	15	18	<0.05	19	58

Notes:		
	HIL-A	Health Based Soil Investigation Levels for Low Density Residential land use values. Proposed use is public open space, HIL-A not applied
	HIL-C	Health Based Soil Investigation Levels for Public Open Space land use values
	HIL-D	Health Based Soil Investigation Levels for Commercial/Industrial land use values (under roadways)
	EIL R/POS	Environmental Soil Investigation Levels for Urban residential and public open spaces
	EIL C/I	Environmental Soil Investigation Levels for commercial/industrial (only applied in areas of site where Commercial/Industrial land use is present)
	PQL	Practical Quantification Limit
	1.23	Reported concentration for contaminant exceeds the EIL
	1.23	Reported concentration for contaminant exceeds HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-C and EIL
	1.23	Reported concentration for contaminant exceeds HIL-D (only applied in areas of site where Commercial/Industrial land use is present)
	<0.3	Reported concentration for contaminat is below the laboratory PQL

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Table J2
Summary of Coffey DOI2 Analytical Soil Results - Metals

Sample # and Depth	Sampled Date	Coffey Sampling Rationale	Current proposed End-use	ChemName	Cyanide Total	Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury	Nickel	Zinc
				Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				EQL	0.1	3	0.3	0.3	0.5	1	0.05	0.5	0.5
				NEPM 2013 HIL-A	250	100	20	100	6,000	300	40	400	7,400
				NEPM 2013 HIL-C	240	300	90	300	17,000	600	80	1,200	30,000
				NEPM 2013 HIL-D	1500	3,000	900	3,600	240,000	1,500	730	6,000	400,000
				NEPM 2013 EIL R/POS		100			230	1,100		310	880
				NEPM 2013 EIL C/I		160		810	330	1,800		520	1,300
AEC6: Mineral Processing Area													
MP1_0.0-0.2	4/08/2009	Mineral P.	Residential		0.2	12	0.5	26	14	120	<0.05	14	160
MP1_0.5-0.6	4/08/2009	Mineral P.	Residential		-	11	0.3	27	14	89	<0.05	12	110
MP2_0.0-0.2	4/08/2009	Mineral P.	Residential		0.1	13	0.6	24	13	120	<0.05	13	180
MP2_0.5-0.6	4/08/2009	Mineral P.	Residential		-	11	0.4	26	13	95	<0.05	13	130
MP3_0.0-0.2	4/08/2009	Mineral P.	Residential		-	10	0.4	22	17	110	<0.05	16	320
MP3_0.5-0.6	4/08/2009	Mineral P.	Residential		-	10	0.3	22	17	97	<0.05	16	230
MP4_0.0-0.2	4/08/2009	Mineral P.	Residential		0.1	20	0.6	28	28	190	<0.05	18	300
MP4_0.5-0.6	4/08/2009	Mineral P.	Residential		-	15	0.4	28	22	160	<0.05	18	240
MP5_0.0-0.2	4/08/2009	Mineral P.	Residential		-	20	0.6	30	26	230	<0.05	25	350
MP5_0.5-0.6	4/08/2009	Mineral P.	Residential		-	21	0.6	31	26	200	<0.05	25	350
MP6_0.0-0.2	4/08/2009	Mineral P.	Residential		-	22	1.1	26	17	310	<0.05	19	500
MP6_0.5-0.6	4/08/2009	Mineral P.	Residential		-	18	0.8	35	11	210	<0.05	26	480
MP7_0.0-0.2	4/08/2009	Mineral P.	Residential		-	7	<0.3	24	4.5	39	<0.05	11	80
MP7_0.5-0.6	4/08/2009	Mineral P.	Residential		-	7	<0.3	24	4.3	41	<0.05	9.9	70
MP8_0.0-0.2	4/08/2009	Mineral P.	Residential		-	10	0.3	21	9.7	140	<0.05	11	210
MP8_0.5-0.6	4/08/2009	Mineral P.	Residential		-	11	0.4	22	10	150	<0.05	11	220
MP9_0.0-0.2	4/08/2009	Mineral P.	Residential		<0.1	26	0.5	27	26	140	<0.05	23	220
MP9_0.5-0.6	4/08/2009	Mineral P.	Residential		-	37	0.7	34	32	170	<0.05	24	330
MP10_0.0-0.2	4/08/2009	Mineral P.	Residential		0.2	28	0.6	27	24	130	<0.05	20	250
MP10_0.5-0.6	4/08/2009	Mineral P.	Residential		-	28	0.5	28	25	120	<0.05	21	260
MP11_0.0-0.2	4/08/2009	Mineral P.	Residential		0.2	40	0.7	30	29	190	<0.05	23	330
MP11_0.5-0.6	4/08/2009	Mineral P.	Residential		-	35	0.5	25	23	110	<0.05	24	200
MP12_0.0-0.2	4/08/2009	Mineral P.	Residential		-	21	0.5	25	19	97	<0.05	22	210
MP12_0.5-0.6	4/08/2009	Mineral P.	Residential		-	20	0.5	23	20	94	<0.05	19	200
MP13_0.0-0.2	4/08/2009	Mineral P.	Residential		0.2	21	0.4	26	19	99	<0.05	19	200
MP13_0.5-0.6	4/08/2009	Mineral P.	Residential		-	22	0.4	27	20	100	<0.05	20	190
MP14_0.0-0.2	5/08/2009	Mineral P.	Residential		0.5	33	2.2	25	22	300	<0.05	20	610
MP14_0.5-0.6	5/08/2009	Mineral P.	Residential		-	30	2.3	25	21	320	<0.05	19	620
MP15_0.0-0.2	5/08/2009	Mineral P.	Residential		-	45	2.1	27	25	400	<0.05	22	720
MP15_0.5-0.6	5/08/2009	Mineral P.	Residential		-	41	2.1	25	23	360	<0.05	20	660
MP16_0.0-0.2	5/08/2009	Mineral P.	Residential		-	17	0.94	25	14	310	<0.05	14	370
MP16_0.5-0.6	5/08/2009	Mineral P.	Residential		-	18	1.3	25	15	330	<0.05	16	420
MPSUMP-1	5/08/2009	Mineral P.	Residential		0.6	96	1.8	58	87	220	0.08	19	1,800
MPSUMP-2	5/08/2009	Mineral P.	Residential		1.4	45	9.6	19	91	240	0.15	22	*8100*
AEC3: Mine Site 4													
MS4-1_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	6	0.3	21	11	63	<0.05	16	130
MS4-1_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	6	<0.3	25	13	41	<0.05	16	76
MS4-19_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	10	0.6	19	13	44	<0.05	17	220
MS4-2_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	6	0.4	22	12	65	<0.05	19	140
MS4-3_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	4	<0.3	17	10	45	<0.05	12	96
MS4-3_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	5	0.3	20	13	48	<0.05	15	110
MS4-4_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	5	0.5	20	14	47	<0.05	14	120
MS4-4_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	5	0.5	21	14	45	<0.05	16	110
MS4-5_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	7	0.4	20	15	58	<0.05	20	180
MS4-5_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	7	0.4	19	16	53	<0.05	21	160
MS4-6_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	9	0.5	24	15	85	<0.05	22	190
MS4-6_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	8	0.4	22	15	74	<0.05	21	170
MS4-7_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	26	7.4	18	120	**6,300**	0.54	19	11,000
MS4-8_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	26	7.6	18	130	**7,400**	0.63	17	8,900
MS4-9_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	33	7.2	21	52	**1,300**	0.18	20	2,400
MS4-10_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	8	0.4	24	16	130	<0.05	21	200
MS4-11_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	9	0.4	22	16	69	<0.05	21	170
MS4-11_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	6	<0.3	18	15	43	<0.05	16	130
MS4-12_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	8	0.5	21	17	490	<0.05	15	410
MS4-12_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	8	0.4	24	17	390	<0.05	18	360
MS4-13_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	8	0.4	19	15	440	<0.05	14	410
MS4-13_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	8	0.4	20	15	420	<0.05	15	410
MS4-14_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	55	48	12	130	**14,000**	0.67	10	20,000
MS4-15_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	13	3.5	18	28	**1,100**	0.12	14	1,200
MS4-16_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	9	0.5	20	12	38	<0.05	18	210
MS4-17_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	8	0.6	19	11	35	<0.05	17	210
MS4-18_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	8	1.9	22	18	370	<0.05	20	770
MS4-18_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	10	0.97	32	22	160	<0.05	24	700
MS4-2_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	9	<0.3	27	15	29	<0.05	18	53
MS4-20_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	9	0.5	20	14	39	<0.05	18	170
MS4-21_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	10	0.6	20	13	48	<0.05	18	220
MS4-22_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	20	1.8	20	39	**1,300**	0.27	15	1,000
MS4-23_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	23	4.2	14	120	**5,100**	0.85	11	2,400
MS4-24_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	12	2.8	20	27	**1,300**	0.12	14	1,100
MS4-24_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	9	1.1	34	26	200	0.07	24	810
MS4-25_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	9	0.5	22	20	510	<0.05	15	490
MS4-25_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	10	1.1	22	19	650	<0.05	15	640
MS4-26_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	6	0.4	20	10	350	<0.05	16	220
MS4-26A_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	5	0.5	2.2	4.1	15	<0.05	2	180
MS4-26A_0.5-0.6	6/08/2009	Mine Site 4	Public Open Space		-	18	240	11	52	**1,400**	<0.05	13	**57,000**
MS4-27_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	80	11	11	530	**46,000**	3.7	7.1	10,000
MS4-28_0.0-0.2	6/08/2009	Mine Site 4	Public Open Space		-	17	0.4	25	12	39	<0.05	20	83
MS4-29_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	9	0.6	19	13	120	<0.05	12	280
MS4-30_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	9	0.6	19	12	130	<0.05	12	230
MS4-30_0.5-0.6	7/08/2009	Mine Site 4	Public Open Space		-	7	0.5	22	8.9	94	<0.05	13	190
MS4-31_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	8	0.5	20	12	110	<0.05	13	200
MS4-32_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	6	0.3	14	16	110	<0.05	12	110
MS4-33_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	4	0.4	16	9	86	<0.05	12	130
MS4-33_0.5-0.6	7/08/2009	Mine Site 4	Public Open Space		-	6	0.3	16	11	190	<0.05	12	120
MS4-34_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	5	0.5	18	10	86	<0.05	13	140
MS4-34_0.5-0.6	7/08/2009	Mine Site 4	Public Open Space		-	5	0.3	16	9.6	130	<0.05	10	120
MS4-35_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	7	0.3	15	15	110	<0.05	13	130
MS4-36_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	6	<0.3	14	11	26	<0.05	18	51
MS4-37_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	44	2.7	17	350	**33,000**	3.2	8.7	2,400
MS4-38_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	51	2.4	16	340	**25,000**	2.2	7.4	2,200
MS4-39_0.0-0.2	7/08/2009	Mine Site 4	Public Open Space		-	46	2.3	18	340	**23,000**	2.5	8.6	2,200
MS4-41_0.0-0.2	25/11/2009	Mine Site 4	Public Open Space		-	6	1.1	15	7.7	71	<0.05	12	1,200
MS4-43_0.0-0.2	25/11/2009	Mine Site 4	Public Open Space		-	8	<0.3	17	5.7	23	<0.05	14	65
MS4-45_0.0-0.2	25/11/2009	Mine Site 4	Public Open Space		-	8	1.3	17	9.6	67	<0.05	14	1,500
MS4-47_0.0-0.2	25/11/2009	Mine Site 4	Public Open Space		-	4	<0.3	14	5.3	18	<0.05	10	53
MS4-49_0.0-0.2	25/11/2009	Mine Site 4	Public Open Space		-	9	<0.3	16	6.9	23	<0.05	14	69
MS4-51_0.0-0.2	25/11/2009	Mine Site 4	Public Open Space		-	5	<0.3	14	4.9	20	<0.05	10	48
MS4SP1	13/08/2009	Stockpile	Public Open Space		-	200	350	5.4	360	**19,000**	3.2	6.8	**130,000**
MS4SP3	13/08/2009	Stockpile	Public Open Space		-	8	2.6	9.7	18	120	0.16	11	710
MS4SP5	13/08/2009	Stockpile	Public Open Space		-	8	4.9	3.8	190	**35,000**	6	1.5	810
MS4SP7	13/08/2009	Stockpile	Public Open Space		-	6	0.4	2	96	**14,000**	0.65	0.7	360
MS4SP9	13/08/2009	Stockpile	Public Open Space		-	15	0.95	3.2	190	**54,000**	8.5	1.3	840
Samples from Coffey defined residential and open space areas													
OS13_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	11	0.3	20	8.2	16	<0.05	23	64
OS14_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	<3	<0.3	15	8.6	10	<0.05	11	24
OS15_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	3	<0.3	14	7.5	9	<0.05	10	19
OS16_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	6	<0.3	17	14	20	<0.05	14	65
OS17_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	3	<0.3	14	9.3	13	<0.05	12	21
OS18_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	4	<0.3	12	9.4	8	<0.05	17	20
OS19_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	<3	<0.3	13	12	9.5	<0.05	13	22
OS20_0.0-0.2	24/07/2009	Open Space	Public Open Space		-	23	<0.3	15	12	15	<0.05	19	48
OS20-a	28/04/2010	Open Space	Public Open Space		-	5	0.3	14	13	15	<0.05	19	68
OS20-b	28/04/2010	Open Space	Public Open Space		-	6	0.3	17	17	17	<0.05	20	79
OS20-c	28/04/2010	Open Space	Public Open Space		-	4	<0.3	14	14	14	<0.05	16	60
OS20-d	28/04/2010	Open Space	Public Open Space		-	4	<0.3	13	15	13	<0.05	17	69
RE24_0.0-0.2	24/07/2009	Residential	Residential		-	3	<0.3	17	3.6	25	<0.05	4.3	31
RE30_0.0-0.2	24/07/2009	Residential	Public Open Space		-	11	0.5	16	12	99	<0.05	11	160
RE31_0.0-0.2	24/07/2009	Residential	Public Open Space		-	5	0.4	18	10	36	<0.05	14	70
RE32_0.0-0.2	24/07/2009	Residential	Public Open Space		-	7	<0.3	14	11	24	<0.05	15	60
RE33_0.0-0.2	24/07/2009	Residential	Public Open Space		-	5	<0.3	16	11	21	<0.05	12	61
RE35_0.0-0.2	24/07/2009	Residential	Public Open Space		-	<3	<0.3	16	11	12	<0.05	11	38
SP1	5/08/2009	Clay SP	Public Open Space		-	17	0.7	21	23	90	<0.05	31	450
SP2	5/08/2009	Clay SP	Public Open Space		-	11	0.7	21	17	62	<0.05	25	200
SP3	5/08/2009	Clay SP	Public Open Space		-	12	0.6	19	18	60	<0.05	23	210
SP4	5/08/2009	Clay SP	Public Open Space		-	12	0.6	22	17	60	<0.05	24	180

Notes:		
	HIL-A	Health Based Soil Investigation Levels for Low Density Residential land use values
	HIL-C	Health Based Soil Investigation Levels for Public Open Space land use values
	HIL-D	Health Based Soil Investigation Levels for Commercial/Industrial land use values (under roadways)
	EIL R/POS	Environmental Soil Investigation Levels for Urban residential and public open spaces
	EIL C/I	Environmental Soil Investigation Levels for commercial/industrial (only applied in areas of site where Commercial/Industrial land use is present)
	PQL	Practical Quantification Limit
	1.23	Reported concentration for contaminant exceeds the EIL
	1.23	Reported concentration for contaminant exceeds HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-C and EIL
	1.23	Reported concentration for contaminant exceeds HIL-A
	1.23	Reported concentration for contaminant exceeds HIL-A and HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-A, HIL-C and EIL
	1.23	Reported concentration for contaminant exceeds HIL-A and EIL
	1.23	Reported concentration for contaminant exceeds HIL-D (only applied in areas of site where Commercial/Industrial land use is present)
	<0.3	Reported concentration for contaminat is below the laboratory PQL

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Table J3
Summary of Coffey DOI3 Analytical Soil Results - Metals

Sample # and Depth	Sampled Date	Coffey Sampling Rationale	Current proposed End-use	ChemName	Arsenic	Cadmium	Chromium (III+V	Copper	Lead	Mercury	Nickel	Zinc
				Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				EQL	3	0.3	0.3	0.5	1	0.05	0.5	0.5
				NEPM 2013 HIL-A	100	20	100	6,000	300	40	400	7,400
				NEPM 2013 HIL-C	300	90	300	17,000	600	80	1,200	30,000
				NEPM 2013 HIL-D	3,000	900	3,600	240,000	1,500	730	6,000	400,000
				NEPM 2013 EIL R/POS	100			230	1,100		310	880
				NEPM 2013 EIL C/I	160		810	330	1,800		520	1,300
Samples from Coffey defined residential and open space areas												
OS05_0.0-0.2	23/07/2009	Open Space	Residential		5	<0.3	9.6	12	6	<0.05	16	18
OS07_0.0-0.2	23/07/2009	Open Space	Residential		<3	<0.3	17	11	4	<0.05	18	29
OS08_0.0-0.2	23/07/2009	Open Space	Residential		<3	<0.3	18	11	5	<0.05	21	35
OS10_0.0-0.2	23/07/2009	Open Space	Residential		6	<0.3	15	8.8	5	<0.05	19	30
RE02_0.0-0.2	23/07/2009	Residential	Residential		6	<0.3	16	29	6	<0.05	18	24
RE05_0.0-0.2	23/07/2009	Residential	Residential		6	<0.3	19	19	8	<0.05	22	38
RE06_0.0-0.2	23/07/2009	Residential	Residential		8	<0.3	18	15	7	<0.05	20	31
RE10_0.0-0.2	23/07/2009	Residential	Residential		5	<0.3	15	5.5	6	<0.05	13	17
RE13_0.0-0.2	23/07/2009	Residential	Residential		7	<0.3	19	21	11	<0.05	22	62
RE14_0.0-0.2	23/07/2009	Residential	Residential		6	<0.3	18	16	14	<0.05	20	59
RE14_0.5-0.6	23/07/2009	Residential	Residential		7	<0.3	19	18	15	<0.05	21	60
RE15_0.0-0.2	23/07/2009	Residential	Residential		8	<0.3	18	38	4	<0.05	20	24
RE19_0.0-0.2	23/07/2009	Residential	Residential		4	<0.3	17	19	8	<0.05	18	37
RE19_0.5-0.6	23/07/2009	Residential	Residential		4	<0.3	18	19	7	<0.05	19	35
RE20_0.0-0.2	23/07/2009	Residential	Residential		7	<0.3	18	18	10	<0.05	27	60
RE20_0.5-0.6	23/07/2009	Residential	Residential		4	<0.3	19	20	11	<0.05	28	61
RE22_0.0-0.2	23/07/2009	Residential	Residential		3	<0.3	17	7.9	5	<0.05	17	27
RE25_0.0-0.2	24/07/2009	Residential	Residential		3	<0.3	13	12	13	<0.05	14	58
RE26_0.0-0.2	23/07/2009	Residential	Residential		3	<0.3	16	6.2	6	<0.05	12	19
RE26_0.5-0.6	23/07/2009	Residential	Residential		3	<0.3	16	6.5	6	<0.05	12	17
RE28_0.0-0.2	23/07/2009	Residential	Residential		10	<0.3	16	9.7	8	<0.05	20	41
RE28_0.5-0.6	23/07/2009	Residential	Residential		9	<0.3	21	11	11	<0.05	25	46
RE29_0.0-0.2	24/07/2009	Residential	Residential		5	<0.3	21	9.9	14	<0.05	19	56
RE41_0.0-0.2	24/07/2009	Residential	Residential		6	0.3	18	15	16	<0.05	23	63
AEC1: Mine Site 1												
MS1-10_0.5-0.6	30/07/2009	Mine Site 1	Residential		11	0.4	23	31	11	<0.05	19	45
MS1-11_0.0-0.2	30/07/2009	Mine Site 1	Residential		10	0.4	24	21	20	<0.05	32	80
MS1-11_0.5-0.6	30/07/2009	Mine Site 1	Residential		9	0.3	21	20	22	<0.05	29	87
MS1-11_0.9-1.0	30/07/2009	Mine Site 1	Residential		11	0.5	31	19	17	<0.05	19	51
MS1-12_0.0-0.2	30/07/2009	Mine Site 1	Residential		6	0.3	22	14	9	<0.05	26	55
MS1-12_0.5-0.6	30/07/2009	Mine Site 1	Residential		6	0.3	21	15	6	<0.05	25	51
MS1-13_0.0-0.2	30/07/2009	Mine Site 1	Residential		6	0.3	20	32	13	<0.05	25	62
MS1-13_0.5-0.6	30/07/2009	Mine Site 1	Residential		6	<0.3	20	50	13	<0.05	25	51
MS1-14_0.0-0.2	30/07/2009	Mine Site 1	Residential		8	0.5	20	15	21	<0.05	33	150
MS1-14_0.5-0.6	30/07/2009	Mine Site 1	Residential		7	0.4	28	27	15	<0.05	19	62
MS1-15_0.0-0.2	30/07/2009	Mine Site 1	Residential		6	<0.3	17	21	13	<0.05	16	52
MS1-15_0.5-0.6	30/07/2009	Mine Site 1	Residential		10	<0.3	22	26	10	<0.05	21	53
MS1-16_0.0-0.2	30/07/2009	Mine Site 1	Residential		8	0.4	25	25	11	<0.05	27	60
MS1-16_0.5-0.6	30/07/2009	Mine Site 1	Residential		7	0.3	22	22	11	<0.05	27	62
MS1-2_0.0-0.2	30/07/2009	Mine Site 1	Residential		10	0.3	22	19	4	<0.05	39	40
MS1-2_0.5-0.6	30/07/2009	Mine Site 1	Residential		9	0.3	21	27	4	<0.05	34	30
MS1-3_0.0-0.2	30/07/2009	Mine Site 1	Residential		12	0.3	24	9.1	7	<0.05	28	37
MS1-3_0.5-0.6	30/07/2009	Mine Site 1	Residential		12	0.3	25	8.1	6	<0.05	38	41
MS1-4_0.0-0.2	30/07/2009	Mine Site 1	Residential		4	0.4	18	14	20	<0.05	25	71
MS1-4_0.5-0.6	30/07/2009	Mine Site 1	Residential		<3	0.3	21	16	12	<0.05	23	47
MS1-5_0.0-0.2	30/07/2009	Mine Site 1	Residential		4	0.3	18	13	17	<0.05	26	69
MS1-5_0.5-0.6	30/07/2009	Mine Site 1	Residential		5	0.3	18	17	7	<0.05	24	46
MS1-6_0.0-0.2	30/07/2009	Mine Site 1	Residential		6	0.4	17	11	42	<0.05	32	120
MS1-6_0.5-0.6	30/07/2009	Mine Site 1	Residential		9	0.4	19	23	27	<0.05	57	84
MS1-7_0.0-0.2	30/07/2009	Mine Site 1	Residential		11	0.9	20	14	28	<0.05	28	220
MS1-7_0.5-0.6	30/07/2009	Mine Site 1	Residential		8	0.5	18	14	19	<0.05	27	210
MS1-7_0.9-1.0	30/07/2009	Mine Site 1	Residential		11	0.4	25	16	12	<0.05	30	80
MS1-7_1.4-1.5	30/07/2009	Mine Site 1	Residential		8	0.3	20	12	6	<0.05	33	55
MS1-8_0.0-0.2	30/07/2009	Mine Site 1	Residential		9	0.5	35	15	35	<0.05	34	90
MS1-8_0.5-0.6	30/07/2009	Mine Site 1	Residential		7	0.4	29	14	32	0.05	34	81
MS1-9_0.0-0.2	30/07/2009	Mine Site 1	Residential		9	<0.3	20	20	7	<0.05	34	52
MS1-9_0.5-0.6	30/07/2009	Mine Site 1	Residential		7	<0.3	17	19	9	<0.05	31	52
MS1SP1	13/08/2009	Mine Site 1	Residential		10	0.4	20	14	23	<0.05	39	59
MS1SP3	13/08/2009	Mine Site 1	Residential		10	0.4	23	25	8	<0.05	33	60

Notes:		
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	EIL R/POS	Environmental Soil Investigation Levels for Urban residential and public open spaces
	EIL C/I	Environmental Soil Investigation Levels for commercial/industrial (only applied in areas of site where Commercial/Industrial land use is present)
	PQL	Practical Quantification Limit
	1.23	Reported concentration for contaminant exceeds the EIL
	1.23	Reported concentration for contaminant exceeds HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-A
	1.23	Reported concentration for contaminant exceeds HIL-A and HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-A, HIL-C and EIL
	1.23	Reported concentration for contaminant exceeds HIL-A and EIL
	1.23	Reported concentration for contaminant exceeds HIL-D (only applied in areas of site where Commercial/Industrial land use is present)
	<0.3	Reported concentration for contaminat is below the laboratory PQL

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Table J4
Summary of Coffey DOI4 Analytical Soil Results - Metals

Sample # and Depth	Sampled Date	Coffey Sampling Rationale	Current proposed End-use	ChemName	Arsenic	Cadmium	Chromium (III+V	Copper	Lead	Mercury	Nickel	Zinc
				Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				EQL	3	0.3	0.3	0.5	1	0.05	0.5	0.5
				NEPM 2013 HIL-A	100	20	100	6,000	300	40	400	7,400
				NEPM 2013 HIL-C	300	90	300	17,000	600	80	1,200	30,000
				NEPM 2013 HIL-D	3,000	900	3,600	240,000	1,500	730	6,000	400,000
				NEPM 2013 EIL R/POS	100			230	1,100		310	880
				NEPM 2013 EIL C/I	160		810	330	1,800		520	1,300
Samples from Coffey defined residential and open space areas												
OS02_0.0-0.2	28/07/2009	Open Space	No longer within site boundary		3	<0.3	14	5.5	18	<0.05	14	51
OS03_0.0-0.2	24/07/2009	Open Space	Public open space		6	0.4	25	20	7	<0.05	23	34
OS04_0.0-0.2	24/07/2009	Open Space	Public open space		3	0.91	37	8.6	11	<0.05	15	36
OS06_0.0-0.2	24/07/2009	Open Space	Residential		9	<0.3	21	30	130	<0.05	24	56
RE01_0.0-0.2	28/07/2009	Residential	No longer within site boundary		8	0.4	28	13	68	<0.05	20	170
RE03_0.0-0.2	28/07/2009	Residential	No longer within site boundary		5	<0.3	18	10	30	<0.05	17	65
RE04_0.0-0.2	28/07/2009	Residential	Residential		4	0.4	16	15	20	<0.05	26	66
RE09_0.0-0.2	28/07/2009	Residential	Residential		4	<0.3	17	11	25	<0.05	11	60
RE12_0.0-0.2	27/07/2009	Residential	Residential		4	0.3	17	16	13	<0.05	28	78

Notes:		
	HIL-A	Health Based Soil Investigation Levels for Low Density Residential land use values
	HIL-C	Health Based Soil Investigation Levels for Public Open Space land use values
	HIL-D	Health Based Soil Investigation Levels for Commercial/Industrial land use values (under roadways)
	EIL R/POS	Environmental Soil Investigation Levels for Urban residential and public open spaces
	EIL C/I	Environmental Soil Investigation Levels for commercial/industrial (only applied in areas of site where Commercial/Industrial land use is present)
	PQL	Practical Quantification Limit
	1.23	Reported concentration for contaminant exceeds the EIL
	1.23	Reported concentration for contaminant exceeds HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-A
	1.23	Reported concentration for contaminant exceeds HIL-A and HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-A, HIL-C and EIL
	1.23	Reported concentration for contaminant exceeds HIL-A and EIL
	1.23	Reported concentration for contaminant exceeds HIL-D (only applied in areas of site where Commercial/Industrial land use is present)
	<0.3	Reported concentration for contaminat is below the laboratory PQL

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Table J5
Summary of Coffey DOI5 Analytical Soil Results - Metals

Sample # and Depth	Sampled Date	Coffey Sampling Rationale	Current proposed End-use								
			Method_Type	Metals in Soil by ICP-OES					Mercury Cold Vapor/Hg Analyser		
			ChemName	Arsenic	Cadmium	Chromium (III+V	Copper	Lead	Mercury	Nickel	Zinc
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			EQL	3	0.3	0.3	0.5	1	0.05	0.5	0.5
			NEPM 2013 HIL-A	100	20	100	6,000	300	40	400	7,400
			NEPM 2013 HIL-C	300	90	300	17,000	600	80	1,200	30,000
			NEPM 2013 HIL-D	3,000	900	3,600	240,000	1,500	730	6,000	400,000
			NEPM 2013 EIL R/P(	100			230	1,100		310	880
			NEPM 2013 EIL C/I	160		810	330	1,800		520	1,300
Samples from Coffey defined residential and open space areas											
OS01_0.0-0.2	27/07/2009	Open Space	No longer with site boundary	12	0.3	18	12	26	<0.05	21	84
OS09_0.0-0.2	27/07/2009	Open Space	Public Open Space	5	0.5	21	14	24	<0.05	23	120
OS11_0.0-0.2	27/07/2009	Open Space	Public Open Space	<3	<0.3	20	6.4	13	<0.05	12	43
OS12_0.0-0.2	27/07/2009	Open Space	Public Open Space	<3	<0.3	14	9.8	11	<0.05	13	20
RE07_0.0-0.2	27/07/2009	Residential	No longer with site boundary	7	<0.3	17	6.3	14	<0.05	12	26
RE08_0.0-0.2	27/07/2009	Residential	Residential	7	<0.3	20	11	34	<0.05	17	52
RE11_0.0-0.2	27/07/2009	Residential	Residential	<3	<0.3	18	7.3	6	<0.05	9.7	36
RE16_0.0-0.2	27/07/2009	Residential	Residential	3	<0.3	17	14	20	<0.05	18	62
RE17_0.0-0.2	27/07/2009	Residential	Residential	<3	<0.3	17	15	24	<0.05	16	52
RE18_0.0-0.2	27/07/2009	Residential	Residential	10	2.1	19	16	280	<0.05	18	1,100
RE21_0.0-0.2	27/07/2009	Residential	Residential	<3	<0.3	14	8.1	12	<0.05	8.7	40
RE23_0.0-0.2	27/07/2009	Residential	Residential	<3	<0.3	23	15	54	<0.05	16	69
RE27_0.0-0.2	27/07/2009	Residential	Residential	<3	<0.3	21	7.5	9.6	<0.05	14	48

Notes:		
	HIL-A	Health Based Soil Investigation Levels for Low Density Residential land use values
	HIL-C	Health Based Soil Investigation Levels for Public Open Space land use values
	HIL-D	Health Based Soil Investigation Levels for Commercial/Industrial land use values (under roadways)
	EIL R/POS	Environmental Soil Investigation Levels for Urban residential and public open spaces
	EIL C/I	Environmental Soil Investigation Levels for commercial/industrial (only applied in areas of site where Commercial/Industrial land use is present)
	PQL	Practical Quantification Limit
	1.23	Reported concentration for contaminant exceeds the EIL
	1.23	Reported concentration for contaminant exceeds HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-A
	1.23	Reported concentration for contaminant exceeds HIL-A and HIL-C
	1.23	Reported concentration for contaminant exceeds HIL-A, HIL-C and EIL
	1.23	Reported concentration for contaminant exceeds HIL-A and EIL
	1.23	Reported concentration for contaminant exceeds HIL-D (only applied in areas of site where Commercial/Industrial land use is present)
	<0.3	Reported concentration for contaminat is below the laboratory PQL

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Table J6
Summary of Coffey Drainage Channel Analytical Soil Results - Metals, OCPs and OPPs

					Field_ID	DC1	DC2	DC3	DC4	DC5	DC6	DC7	DC8	DC9	DC10	DC12	DC13	QC14
					Sampled_Date-Time	7/08/2009	7/08/2009	10/08/2009	10/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	7/08/2009	10/08/2009	10/08/2009	7/08/2009
					Area	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.	Drainage C.
Method_Type	**ChemName**	**Units**	**EQL**	**NEPM 2013 EIL**	**NEPM 2013 HIL-C**													
Metals in Soil by ICP-OES	Arsenic	mg/kg	3	**100**	300	9	4	5	5	3	5	5	6	8	5	<3	33	6
	Cadmium	mg/kg	0.3		90	<0.3	0.4	<0.3	<0.3	0.3	0.3	0.3	<0.3	0.4	0.3	<0.3	0.7	<0.3
	Chromium (III+VI)	mg/kg	0.3		300	23	14	20	17	15	16	19	17	20	16	12	19	20
	Copper	mg/kg	0.5	**230**	17000	17	15	17	7.8	15	11	8.9	8.1	18	10	6.9	24	10
	Lead	mg/kg	1	**1100**	600	26	130	12	9	13	9.4	13	11	12	12	9	94	13
Mercury Cold Vapor/Hg Analyser	Mercury	mg/kg	0.05		80	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	0.5	**310**	1200	18	15	23	18	13	17	18	17	19	18	9.1	26	17
	Zinc	mg/kg	0.5	**880**	30000	56	210	52	36	61	68	76	46	67	61	18	180	49
OC Pesticides in Soil	2,4-DDT	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	4,4-DDE	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	a-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Aldrin	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	b-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	cis-Chlordane	mg/kg	0.1		70	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	d-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	DDD	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	DDT	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dieldrin	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan I	mg/kg	0.1		340	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan II	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin	mg/kg	0.1		20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin aldehyde	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin ketone	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	g-BHC (Lindane)	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor	mg/kg	0.1		10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Hexachlorobenzene	mg/kg	0.1		10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Methoxychlor	mg/kg	0.1		400	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDD	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDE	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-chlordane	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-Nonachlor	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ESDAT Combined Compounds	Aldrin + Dieldrin	mg/kg			10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDT+DDE+DDD	mg/kg			400	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
OP Pesticides in Soil by GCMS	Azinophos methyl	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Bromophos-ethyl	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Chlorpyrifos	mg/kg	0.2		250	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Diazinon	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	mg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dimethoate	mg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Fenitrothion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Malathion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Methidathion	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Parathion	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Notes:	HIL-C	Health Based Soil Investigation Levels for Public Open Space land use values
	EIL	Environmental Soil Investigation Levels for Urban residential and public open spaces
	PQL	Practical Quantification Limit
	1.23	Reported concentration for contaminant exceeds the EIL
	1.23	Reported concentration for contaminant exceeds HIL-C
	<0.3	Reported concentration for contaminat is below the laboratory PQL

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Table J7
Summary of Coffey Groundwater and Surface Water Results - Metals, OPPs and OCPs

Method_Type	ChemName	Units	EQL	Field_ID	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	SW1	SW2	SW3
				Sampled_Date-Time	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	8/10/2009	13/08/2009	13/08/2009	13/08/2009
				SampleComments	DOI1	DOI1	DOI1	DOI2	DOI2	DOI2	DOI2	DOI4	Drainage C.	Drainage C.	Drainage C.
Method_Type	**ChemName**	**Units**	**EQL**	**GIL**											
Trace HM (ICP-MS)-Dissolved	Arsenic	mg/L	0.001		0.015	0.001	0.002	<0.001	0.006	0.002	0.038	0.014	<0.001	<0.001	<0.001
	Cadmium	mg/L	0.0001	**0.0002**	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium (III+VI)	mg/L	0.001		<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper	mg/L	0.001	**0.0014**	**0.002**	**0.003**	**0.002**	0.001	0.001	**0.003**	0.001	<0.001	0.001	**0.004**	**0.005**
	Lead	mg/L	0.001	**0.0034**	**0.006**	**0.2**	**0.009**	**0.03**	0.003	**0.042**	<0.001	**0.009**	<0.001	<0.001	<0.001
	Nickel	mg/L	0.001	**0.011**	0.001	0.001	<0.001	0.005	0.002	0.002	0.001	0.004	<0.001	<0.001	<0.001
	Zinc	mg/L	0.001	**0.008**	0.006	**0.01**	0.005	**0.008**	**0.011**	**0.014**	0.003	**0.008**	**0.008**	**0.016**	**0.01**
Anions in water	Sulphate	mg/L	0.1	**400**	62	25	35	81	150	130	22	200	19	18	11
ESDAT Combined Compounds	Aldrin + Dieldrin	µg/L			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
	DDT+DDE+DDD	µg/L			<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Inorganics	pH (Lab)	pH_Units	0		7.4	7.4	7.3	7	7.2	7	8.1	7.4	-	-	-
Mercury Cold Vapor/Hg Analyser	Mercury (Filtered)	mg/L	0.0001	**0.0006**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-
OC Pesticides in Water	2,4-DDT	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	4,4-DDE	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	a-BHC	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aldrin	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	b-BHC	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	cis-Chlordane	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	d-BHC	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDD	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDT	µg/L	0.2	**0.01**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Dieldrin	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endosulfan I	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endosulfan II	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endosulfan sulphate	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endrin	µg/L	0.2	**0.02**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Endrin aldehyde	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endrin ketone	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	g-BHC (Lindane)	µg/L	0.2	**0.2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Heptachlor	µg/L	0.2	**0.09**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Heptachlor epoxide	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Hexachlorobenzene	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Methoxychlor	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	o,p'-DDD	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	o,p'-DDE	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	trans-chlordane	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	trans-Nonachlor	mg/L	0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
OP Pesticides in Water by GCMS	Azinophos methyl	µg/L	0.2	**0.02**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**
	Bromophos-ethyl	µg/L	0.2		-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2
	Chlorpyrifos	µg/L	0.2	**0.01**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**
	Diazinon	µg/L	0.5	**0.01**	-	-	-	-	-	-	-	-	**<0.5**	**<0.5**	**<0.5**
	Dichlorvos	µg/L	1		-	-	-	-	-	-	-	-	<1	<1	<1
	Dimethoate	µg/L	1	**0.15**	-	-	-	-	-	-	-	-	**<1**	**<1**	**<1**
	Ethion	µg/L	0.2		-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2
	Fenitrothion	µg/L	0.2	**0.2**	-	-	-	-	-	-	-	-	<0.2	<0.2	<0.2
	Malathion	µg/L	0.2	**0.05**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**
	Methidathion	µg/L	0.5		-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5
	Parathion	µg/L	0.2	**0.004**	-	-	-	-	-	-	-	-	**<0.2**	**<0.2**	**<0.2**

Notes		
	GIL	Groundwater Investigation Levels for fresh water environments - apply to typical slightly-moderately disturbed systems
	0.002	Reported concentration for contaminant exceeds the GIL
	<0.3	Reported concentration for contaminat is below the laboratory PQL

Douglas Partners
Geotechnics / Environment / Groundwater

Table J8: Summary of Laboratory Results – Metals

				Metals							
				Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc
			PQL	4	0.4	1	1	1	0.1	1	1
Sample ID	Depth	Sample Date	End use	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
AEC4: Additional Mine Site											
ASM1	0.1 - 0.2 m	21/07/2020	Residential	78	38	14	85	3300	1	51	9000
				100 100	20 NC	100 490	6000 230	300 1100	40 NC	400 310	7400 880
ASM2	0.1 - 0.2 m	21/07/2020	Residential	<4	2	8	9	65	<0.1	9	830
				100 100	20 NC	100 490	6000 230	300 1100	40 NC	400 310	7400 880
QC-ASM[a]	0 m	21/07/2020	Residential	<4	2	4	5	19	<0.1	4	530
				100 100	20 NC	100 490	6000 230	300 1100	40 NC	400 310	7400 880
ASM3	0.1 - 0.2 m	21/07/2020	Residential	<4	2	11	8	140	0.1	12	1100
				100 100	20 NC	100 490	6000 230	300 1100	40 NC	400 310	7400 880
ASM4	0.1 - 0.2 m	21/07/2020	Residential	9	0.5	23	14	48	<0.1	19	360
				100 100	20 NC	100 490	6000 230	300 1100	40 NC	400 310	7400 880
AEC5: Limestone Quarry											
JCH5-1	0.1 - 0.2 m	21/07/2020	Residential	17	0.6	<1	<1	17	<0.1	2	84
				100 100	20 NC	100 490	6000 230	300 1100	40 NC	400 310	7400 880
JCH5-2	0.1 - 0.2 m	21/07/2020	Residential	15	2	27	27	510	<0.1	29	1600
				100 100	20 NC	100 490	6000 230	300 1100	40 NC	400 310	7400 880
AEC5: JCH13											
JCH13-1	0.1 - 0.2 m	21/07/2020	Public open space	10	<0.4	40	7	12	<0.1	21	51
				300 100	90 NC	300 490	17000 230	600 1100	80 NC	1200 310	30000 880
QC-JCH[a]	0 m	21/07/2020	Public open space	9	<0.4	45	7	8	<0.1	21	53
				300 100	90 NC	300 490	17000 230	600 1100	80 NC	1200 310	30000 880
JCH13-2	0.1 - 0.2 m	21/07/2020	Public open space	10	<0.4	34	3	3	<0.1	17	41
				300 100	90 NC	300 490	17000 230	600 1100	80 NC	1200 310	30000 880
JCH13-3	0.1 - 0.2 m	21/07/2020	Public open space	12	<0.4	41	7	9	<0.1	20	34
				300 100	90 NC	300 490	17000 230	600 1100	80 NC	1200 310	30000 880
JCH13-4	0.1 - 0.2 m	21/07/2020	Public open space	10	0.5	26	3	4	<0.1	15	57
				300 100	90 NC	300 490	17000 230	600 1100	80 NC	1200 310	30000 880

Lab result	
HIL/HSL value	EIL/ESL value

HIL/HSL exceedance; EIL/ESL exceedance; HIL/HSL and EIL/ESL exceedance; ML exceedance; ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report; **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL	NEPC, Schedule B1 - HIL- A for AEC4 and AEC5: Limestone quary, HIL C for AEC5: JCH13
EIL	NEPC, Schedule B1 - EIL UR/POS (undefined)
a	QA/QC replicate of sample listed directly below the primary sample