Attachment N

Preliminary (Environmental) Site Investigation

Canberra Brickworks

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Canberra Brickworks

For: Land Devlopment Agency

18 February 2014

Project Name:	Preliminary (Environmental) Site Investigation, Canberra Brickworks
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PREPARATION, REVIEW AND AUTHORISATION

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EXECUTIVE SUMMARY

SMEC Australia Pty Ltd (SMEC) was engaged by the LDA to undertake a Preliminary Geotechnical and Environmental Site Investigation (PSI) at the Canberra Brickworks, ACT (the Site). This report presents the findings of the Environmental Investigation undertaken at the Site.

The purpose of this PSI was to provide preliminary Site contamination data for the information of the LDA regarding the contamination status of the Site. Assessment of the suitability of the site for any particular development would then be subject to the outcomes of a future Detailed Site Assessment (DSI).

The available historical data indicate the northern portion of the Site has been used as brickworks since the early 1900's. A disused quarry is located adjacent (east) and a demolished workers accommodation is located adjacent (south) to the brickworks. The reminder of the Site (southern areas) was formerly grazing land which has been developed to include road infrastructure (Cotter Road, Adelaide Avenue and Yarra Glen).

Parts of the brickworks are currently leased by Thor's Hammer a wood recycling business, the potential for contamination attributed to current land uses is considered low.

A total of 28 test pits were advanced across the Site and 42 samples submitted for laboratory analysis to evaluate contaminants of concern.

Fill material was logged at 18 of the 28 test pit locations. Dependent on the sample location the fill materials were observed to comprise:

- **Brickworks and Quarry**: brick waste, ash, quarry cuttings (shale) with traces of anthropogenic inclusions (glass, metal and bitumen) to the practical limit of excavation of 3 metres below ground level (mbgl). The nature and extent of fill beyond 3mbgl is unknown;
- **Surrounding Areas**: sandy to silty clay, probable reworked natural soils, generally encountered at shallow depths less than 1 mbgl; and
- **Adjacent Cotter Rd (TP02)**: silty cobbles to gravelly sand with traces of brick and bitumen, refusal on concrete 2 mbgl, the nature of fill is expected to be attributed to the construction of the adjacent road, however the extent of fill is unknown.

Natural soils were logged to comprise soft brown silty topsoils underlain by medium to stiff red-brown silty clays and clays. Natural soils graded to weathered red brown residual soils (silty clays and clay) and were underlain by shale, dacite, siltstone or sandstone bedrock. Strength and weathering of the bedrock material varied across the Site and was logged between depths of 0.17 and 1.9 mbgl.

All analyte concentrations in natural and fill samples submitted for analysis were less than the adopted (human health based and ecological) assessment criteria. In particular, it was noted that polycyclic aromatic hydrocarbon (PAH) concentrations in fill containing coal ash (which are often associated with PAH contamination) were below assessment criteria and typically below laboratory detection limits.

It should be noted, however, that the sampling densities adopted during this preliminary assessment were below though that would typically be adopted during a detailed site investigation (DSI) and the full depth of fill in the quarry has not been investigated.

Based on the our review of previous reports and exiting data SMEC relating to the Site a total of 32 areas of environmental concern (AEC) were identified at the site. Potential risks to human health and

the environment associated with each AEC were considered, supported by data from the limited supplemental soil sampling and analysis conducted by SMEC as part of this preliminary investigation. On this basis preliminary information reviewed to date 28 of the 32 identified AECs were qualitatively assessed be of low risk with no further investigation or limited further investigation recommended.

Generally, based on the limited soil data collected during this PSI, the site ecological and human health risks associated with brickworks, quarry and the former workers accommodation areas of the site are considered moderate to low The remainder of the Site (the Southern Areas) typically comprised of natural soils grading to weathered bedrock. Soil analytical results returned concentrations of contaminants less than the adopted assessment criteria, the potential for contamination is therefore considered low.

Although no potential source of groundwater contamination was identified during this investigation, no groundwater testing or assessment groundwater conditions at the Site have been made.

The results of this primary investigation are not sufficient to assess the suitability of the site for a specific planned land use. It is recommended that, once detailed plans indicating the proposed land use(s) across the Site have been developed that a detailed site investigation (DSI) be undertaken to assess the suitability of the site for the planned land use(s). Typically a Site Audit Report (SAR) and Site Audit Statement (SAS) regarding the suitability of the Site would be required by the approving authority and an ACT EPA accredited Site Contamination Auditor would be engaged to independently review the DSI and any subsequent remedial works as supported by the ACT EPA.

1 INTRODUCTION

1.1 General

SMEC Australia Pty Ltd (SMEC) was engaged by the LDA to undertake a Preliminary Geotechnical and Environmental Site Investigation (PSI) at the Canberra Brickworks, ACT (the Site). This report summarises the work conducted and the results of the Environmental Investigation including the findings from the historical information review, field observations and analytical data from analysis of soil samples collected between the 9th and 11th of September 2013. The results of the geotechnical investigation are presented in a separate geotechnical report.

The location of the Site is presented in Figure 1 and the Site layout and features are presented in Figure 2 and Figure 2a (**Appendix A**). Features of the Site include a former brickworks, former quarry, and former workers accommodation with open grassland to the south. A draft masterplan has been prepared by the LDA for the redevelopment of the Site. The proposed redevelopment of the Site will include medium density residential and commercial land use. A copy of the draft masterplan provided in **Appendix B,** which shows proposed building height limitations and park land areas (West Bridge Park and the Quarry Park).

At the time this report was prepared it was also understood that the former brickworks area would likely be redeveloped for commercial use, preserving some of the existing buildings. The remainder of the Site would be redeveloped to include a mix of high, medium and low density land use with park lands (West Bridge Park and the Quarry Park).

1.2 Project Objectives

The purpose of this (environmental) PSI was to provide preliminary Site contamination data for the information of the LDA regarding the contamination status of the Site. Assessment of the suitability of the site for any particular development would then be subject to the outcomes of a future Detailed (environmental) Site Assessment (DSI).

1.3 Limitations

The findings in this report are based on the desk top scope and limited soil testing. SMEC prepared this report for the exclusive use of the LDA for the purposes specified and performed services in a manner consistent with the level of care and expertise ordinarily exercised by members of the environmental consulting profession. No other warranties, expressed or implied, are made or intended.

The Conclusions in this report were based on site observations and other information obtained by SMEC, and on the assumption that these data were representative and reliable. These conclusions must be read in conjunction with the assumptions and uncertainties included in the report. Conditions may vary over time and therefore the timing of the activities of the report should be considered in the use of any information provided herein.

This report is issued on the condition that it will not be altered, amended or abbreviated, issued in part or issued incomplete without our prior approval. We accept no responsibility for any loss, damage or consequence that may arise from breaches of this condition.

1.4 Scope of Works

The following scope of work was undertaken to meet the objectives of the PSI.

- Review of available background data including:
    - Previous environmental and heritage reports;
    - Historical aerial photography;
    - Available geology and hydrogeology maps;
    - Dangerous Goods Search;
    - Groundwater Bore Search; and
    - An Environmental and Sustainable Development (ESDD) Contaminated Land Search.
- Inspection of the Site to identify potential sources and indicators of contamination;
- Completion of 28 test pit's to a maximum depth of 3mbgl across the Site and collection of soil samples to evaluate concentrations of contaminants of concern;
- Submission of collected soil samples for laboratory analysis to National Association of Testing Authorities (NATA) accredited laboratories; and
- Preparation of this PSI report, discussing the historical data, field methodologies, analytical results, identified areas of environmental concern (AECs) and preliminary findings.

SMEC notes that the scope of the PSI was prepared to identify the AECs present at the Site with limited soil sample collection undertaken in conjunction with the geotechnical investigation (presented under a separate cover). The assessment of groundwater was therefore outside the scope of the PSI.

Furthermore the sampling design and densities were not derived from the endorsed ACT EPA guidelines (**Section 1.5** below) and are not to be relied upon for the assessment of site suitability for the proposed land use.

1.5 Published Guidelines and Framework

This PSI report has been prepared in accordance with the requirements of the guidelines endorsed by the ACT Environment Protection Authority (EPA) as contained in the ACT EPA (2009) Contaminated Sites Environment Protection Policy (EPP):

- ACT Environmental Protection Authority (EPA), 2009. Contaminated Sites Environmental Protection Policy;
- Environment Protection Act, 1997;
- Environment Protection Regulation, 2005;
- National Environment Protection Council (NEPC), 1999 – National Environmental Protection (Assessment of Site Contamination) Measure (Amended 2013) – "the ASC NEPM";
- NSW EPA, 2000 (reprinted 2011), Guidelines for Consultants Reporting on Contaminated Sites; and

- Standards Australia, 2005 – AS 4482.1: Guide to the investigation and sampling of potentially contaminated soils: Part 1 – Non-volatile and semi volatile compounds.

1.6 Data Quality Objectives

The seven step Data Quality Objective (DQO) process for this PSI has been adopted in accordance with the ASC NEPM. The DQO process is a seven step process to assist the development of sampling programs that produce data of sufficient reliability to support the decision making process. The DQOs established for the PSI are presented in **Appendix C**.

1.7 Abbreviations

This section includes an alphabetical list of abbreviations used in this report:

ACT	Australian Capital Territory
ACM	Asbestos Containing Material
AST	Above Ground Storage Tank
BTEX	Benzene, toluene, ethyl benzene and xylenes
DECCEW	Department of the Environment, Climate Change, Energy, and Water
EPA	Environment Protection Authority
EPU	Environment Protection Unit (part of Territory and Municipal Services)
HM	Generally, arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc
LOR	Limit of reporting
mbgl	Metres below ground level
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection (Site Contamination) Measure
NSW	New South Wales
OCP	Organochlorine Pesticides
OPP	Organophosphorus pesticides
PSI	Preliminary Site Investigation
PAH	Polycyclic Aromatic Hydrocarbons
SMEC	SMEC Australia Pty Ltd
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
UST	Underground Storage Tank

2 SITE SETTING

2.1 Site Definition and Land Zoning

The Site definition and land zoning is summarised below in Table 2.1:

Table 2-1 Site Definition and Land Zoning

Detail	Description
Block and Section	Yarralumla Block 1, 7, and 20 Section 102, Yarralumla Block 3 Section 94, Yarralumla Block 2 Section 103, Yarralumla Block 1 Section 113 and Curtin: Block 1 Section 123
Part Block and Section	Yarralumla Block 1 Section 127, Yarralumla Block 7 Section 121, Deakin: Block 4 Section 65, and Deakin: Block 1 Section 75
Land Zoning	RZ1: Suburban CZ6: Leisure and Accommodation; PRZ2: Restricted Access Recreation Zone PRZ1: Urban Open Space Des: Designated
Area m^2 (approximate)	45,239 m

The land use zones noted above were assessed using the ACT Planning and Land Authority ACTmapi online mapping tool (http://www.actmapi.act.gov.au/).

2.2 Surrounding Land Uses

The surrounding land uses are summarised below:

- North: Low density residential, a Uniting Church is also located adjacent to Denman St in the north eastern portion of the Site. Further north is the Royal Canberra Golf Course followed by the Yarralumla Nursery (1200 m) and Lake Burley Griffin (1800m);
- South: Open urban space, followed by roads (Dudley St, Cotter Rd and Yarra Glen). Further afield Deakin offices are located to the south east and open space to the south west;
- West: Royal Canberra Golf Course. Lake Burley Griffin is located 630 m to the northwest; and
- East: Residential, Suburb of Yarralumla.

2.3 Current Land Use

The current uses of the Site are summarised below:

- Canberra Brickworks: Leased by Thor's Hammer a wood recycler (further detail provided in **Section 3.5**);
- South eastern portion of the Site used for public recreation and vehicle parking; and
- Roads (Dudley St, Cotter Rd and Yarra Glen) and tracks (pedestrian and bicycle use).

The remainder areas of the Site included open grasslands, forest and open urban space.

2.4 Site Description

The Site covers an approximate area of 45 ha, features of the Site include a former brickworks, quarry, and a workers accommodation with open grassland to the south. For ease of reporting, discussion of the Site will be divided by these features, the features are also depicted in Figure 2, **Appendix A**.

A description of the Site features is provided below:

Former Brickworks

The Canberra Brickworks is located adjacent to the suburb of Yarralumla and the Royal Canberra Golf Course. Access to the brickworks is via Denman St adjacent south. The brickworks were operational between 1913 and 1976 and are currently used by Thor's Hammer, a wood recycling business.

Remnant buildings include, 6 kilns, 4 stackhouses, office building and amenities, 3 machinery sheds, workshops, boiler house, a substation, a power house (prior to 1915 was powered by a steam donkey engine), storage sheds and other minor buildings.

Demolished features include temporary kilns (south east), two explosive stores (180 m south and 130 m west respectively), a forklift shed (west), clay storage shed (quarry) and a weatherboard house (quarry).

Former Workers Accommodation

The former Workers Accommodation is located south of the brickworks; it comprises several demolished buildings with a former railway corridor to the west and south. The extent of the former buildings unknown, inspection of this portion of the Site was limited by overgrown grass and woody weed species (blackberries).

Quarry

The quarry is a large levelled grassed area with several exposed natural limestone and shale bedrock features. The area contains an unknown amount of fill used to level the quarry and to form several large mounds located in the northern and western portions of the area. An artificial lake was also present in the northern portion of the quarry.

Southern Areas

The Southern Areas of the Site is comprised of planted tree groves (predominately pine trees) and open grasslands with several major roads (Dudley St, Cotter Rd and Yarra Glen) bisecting the Site east to west.

The area includes the Yarralumla and Deakin Open Space as shown in Figure 2, **Appendix A.**

2.5 Proposed Land Use(s)

SMEC have been provided with a draft 'Canberra Brickworks and Environs Master Plan' dated 2013 and is included in **Appendix B**. SMEC understands that the former brickworks area would likely be redeveloped for commercial use, preserving some of the existing buildings for adaptive reuse.

The remainder of the Site (the former workers accommodation, quarry and southern area) is to be redeveloped to include a mix of high, medium and low density land use with park lands (West Bridge Park and the Quarry Park).

2.6 Topography and Drainage

A traffic report prepared by SMEC entitled 'Canberra Brickworks and Environs Options & Evaluation Report Update' dated 17 December 2013 identified a total of five catchments in the Site; the catchments and anticipated surface water flow is shown in Figure 2c, **Appendix A**.

A summary of the topological and drainage characteristics of the Site in relation to the catchments is provided below:

Catchments 1, 2, 3 and 4

The Southern Areas of the Site generally slope to the southwest, south, and southeast. The topography of this area has been modified to include the Cotter Road and Yarra Glen/Adelaide Avenue. Surface water flow has been mapped to generally flow south towards Yarralumla Creek which discharges into the Molonglo River.

Catchment 3

The brickworks, located adjacent west to the former quarry, is approximately 3m lower than the quarry with the quarry (having been backfilled) to an unknown depth below the natural surface on the north eastern site boundary, as shown in Figure 2c, **Appendix A**.

It is expected that most surface water entering the quarry would either infiltrate fill material or drain towards the artificial lake. A drain located in the north western portion of the quarry suggests at least some water drains to the brickworks area.

The brickworks contain drainage infrastructure (including roof level guttering and surface open concrete lined, open stormwater drains) which are likely to receive majority of surface water in the area, possibly including the quarry and former workers accommodation.

The final discharge point is towards the Royal Canberra Golf Course, although water captured in the brickworks drainage infrastructure is likely to enter the municipal stormwater system, the discharge point is unknown.

2.7 Vegetation

The vegetation of the Site was characterised by areas of tree plantings (pine and deciduous trees) and open grassland (native and modified grassland). Areas within the former brickworks, former quarry and former workers accommodation contained dense grass and woody weed species (blackberry bush) with pine trees.

The vegetation appeared to be in good health with no obvious signs of stress.

2.8 Regional Geology

The Canberra Brickworks quarry form one of Canberra's most important and oldest geological 'monuments'. The quarry derive their geological importance from being the type locality of the Yarralumla formation, a sequence of tuffaceous siltstone, sandstone and limestone deposited in the Silurian Period, 425 Million Years ago.

The Yarralumla formation is the only fossiliferous, marine unit within the extensive volcanic marker horizon in determining the stratigraphy of the volcanic rocks, and through its fossil fauna, provides evidence of the age of these volcanics.

A significant portion of the site has been excavated to provide raw materials for brickmaking (clay). Excess raw materials from the quarry have been combined with brick offcuts to fill site areas and to create mounds around the Site. There was no specific geotechnical information for the site available for this study.

2.9 Regional Hydrogeology

In the Canberra region, groundwater occurs in fractured rock aquifers and in unconsolidated sand in thin alluvial and colluvial aquifers. Yields of bores in fractured rock aquifers are in the range 0.1-5l/s and higher yields are obtained in closely jointed rocks along fault zones.

Groundwater salinity is generally less than 2000 mg/L TDS and largely determined by complex geology and recharge conditions. The depth to groundwater in the Canberra region generally ranges from about 2 to 20m from the surface and is dependent on the underlying geology.

ACT ESDD Groundwater Bore Search

A search of the Environment and Sustainable Development Department (ESDD) Groundwater Bore database indicated that 3 registered abstraction and one investigation/monitoring groundwater were located within a 2 km radius of the Site. No groundwater bores were located within the Site, a copy of the search and a map depicting the location of the bores is presented in **Appendix D**.

Table 2-2 Groundwater Bore Search

Bore ID	Purpose	Construction Date	Total Depth (m)	Static Water Level (m)
WU36	Private (abstraction)	Unknown	43	35
WU105	Private (abstraction)	Unknown		
WU609	Private (abstraction)	Unknown		
Woden3	Investigation	Unknown		

3 SITE HISTORY AND BACKGROUND DATA

3.1 Previous Investigations

SMEC has reviewed two conservation plans (Lester Firth & Associates and Lovell Chen) and six environmental reports (Connell & Wagner and Robson's).

The plans and reports reviewed as part of the PSI are listed below:

- Lester Firth & Associates Pty Ltd (June1986), Old Canberra Brickworks, Conservation Plan, June 1986;
- Connell & Wagner (February 2001), Brickworks Contamination Report, Appendix F;
- Robson Laboratories Pty Ltd (October 2006), Environmental Investigation Audit, Yarralumla Brickworks Block 1 Section 102 Yarralumla, Canberra Central, ACT;
- Robson Laboratories Pty Ltd (March 2006), Survey to Determine the Extent and Condition of Hazardous Building Material at Yarralumla Brickworks, Yarralumla ACT;
- Lovell, Chen – Architects & Heritage Consultants (March 2010), Conservation Management Plan – Canberra Brickworks, Denman Street, Yarralumla, Canberra;
- Robson Environmental Pty Ltd (May 2010), Review of Past Site Works and Indicative Costings for Further Assessment and Remediation, Yarralumla Brickworks, Yarralumla, ACT;
- Robson Environmental Pty Ltd (October 2010), Hazardous Material Survey & Management, Denman St Yarralumla Brickworks, Yarralumla ACT; and
- Robson Environmental Pty Ltd (February 2012), Hazardous Material Survey & Management, Yarralumla Brickworks, Yarralumla ACT.

The reports generally pertain to the Canberra Brickworks located within the northern portion of the Site. A summary of the reports is provided in the following sections.

3.1.1 Lester Firth (1986)

Lester Firth Associates prepared a Conservation Plan for the Canberra Brickworks; the purpose of the plan was to outline conservation policies and management options for the brickworks.

The plan reports on the history of the Canberra Brickworks until its closure in 1976. A series of chorological layout plans are presented in the report, a review of the plans is provided below, copies of each plan can be found in **Appendix E**.

1911: Plan depicts rural character of the Canberra Brickworks. The Site is surrounded by fenced paddocks, Yarralumla creek is identified to the south and Molonglo River to the north. An unnamed road is located adjacent and south of the brickworks.

1916: The first four (4) kilns and associated workshop were located approximately 100 m southeast of the brickworks office building (refer **Appendix E**). The kilns were used sometime between 1913 and 1916 to make the initial bricks used to establish the brickworks. At this time the brickworks comprised a machine shed (with attached blacksmiths shop), office, power house, Staffordshire kiln and a fan house with a stack. A tram line is identified connecting the brickworks to the quarry.

It is noted that the power house was driven by a steam driven donkey engine (likely coal fired) until the Kingston Powerhouse was commissioned in 1915.

1920s: Hardy patent kiln and fan house with stack constructed. A tile making plant installed south of the machine shed. The plan reports that joinery shop, mechanical and electrical workshops were operated briefly for one year.

A 3'6' (1027 mm) narrow gauge steam hauled locomotive rail network installed to service Parliament House, the Kingston Powerhouse and Canberra Hotel. The railway was removed and timber was used for firing kilns due to the economic depression. Prior to the railway, bricks were likely transported in wagons pulled by a steam driven tractor.

1950s: Post war growth included the establishment of the brickworks workers accommodation, crusher/pan houses, workshops and machine bays. Two temporary downdraft and one Hardy patent kiln with stack were also constructed.

The workers accommodation comprised two sleeping quarters, kitchen and mess hall, several huts and a latrine (toilet) block.

Carpenters shed was constructed approximately 50 m south east of the office and power house.

A diagrammatic representation of the brick making process (1960) is presented in the plan (refer **Appendix E**).

1960-70s: Three downdraft kilns with stack, forklift shed, oil storage, and extrusion plant were constructed.

The carpenters shed was removed between 1963/1969, the building was replaced with a carpark.

A weighbridge also used to weigh imported material during the 1960s. A concrete pit remains but has be filled.

In 1967 the ACT Health Services found the accommodation to be in '*a state of disrepair, and the area littered with all kinds of rubbish*'. In 1970 attempts were made to dispose of the brickworks workers accommodation, although foundations and building demolition remain visible today.

The brickworks were closed in 1976. All reusable material was relocated to the new Mitchell Brickworks Site.

1976-84: The brickworks were purchased by private developer A.R Marr Pty Ltd, it was envisaged that the brickworks and surrounding area would be redeveloped as a major tourist complex with associated housing.

The quarry area was to become 'quarry gardens' works included land filling, installation of the 'reflection lake' and 'outer quarry' was levelled and grassed to install a 300 mm railway.

Several storage sheds including a Model Railway Workshop were located adjacent to the wall separating the brickworks and quarry. The Model Railway Workshop was formerly used for the storage of coal/oil.

A.R Marr Pty Ltd was put into provisional liquidation and the Commonwealth government regained the lease.

Fill was identified in the A.R Marr Pty Ltd plan as being a development constraint (Lester and Firth**,** **Section 3.4.3**) in the following areas:

- Western Open Space: area was used for dumping brick waste including over burnt brick, broken material, rubble and dust/other unspecified waste from the kilns. The location and volume of fill were unspecified; and
- Quarry Zone; area contains areas of reject brick fill; the location and volume of fill were unspecified.

3.1.2 Connell and Wagner (February 2001)

Connell and Wagner completed a Phase 1 assessment for the Old Canberra Brickworks which was included as an appendix to a Development Control Plan also prepared by Connell and Wagner.

The assessment included a desktop study, site inspection and an interview of personal involved with the operation of the brickworks.

The Phase 1 data identified the following Areas of Environmental Concern (AEC):

- Coal and Oil Bunkers. Location initially used for the storage of coal;
- 1000L underground storage tank (UST) in the forklift area. The status of the UST at this time was unknown;
- Model Railway Workshop. Location initially used for above ground storage for coal and later oil;
- Septic Tank;
- Blacksmiths shop; and
- Explosives Storage Area.

The Phase 1 concluded that the main sources of contamination at the site are attributed to the brickmaking activities (1913 to 1976) including the onsite storage of fuels, oils and possibly explosives. Connell and Wagner also identified the areas of fill sourced from materials within the Site.

The report concluded that the identified AEC's would require further assessment, remediation and validation (as required) in accordance with Environment ACT requirements.

3.1.3 Robson Laboratories (October 2006)

Robson Laboratories completed a report entitled, "Environmental Investigation – Audit Report" detailing the results of soil testing targeting of specific facilities within the Yarralumla Brickworks Complex, Yarralumla ACT. The purpose of the investigation was to assess the potential environmental impact arising from former uses at each facility. The facilities targeted also include AEC identified by Connell and Wagner (2001) and are summarised below:

Brickworks

- Explosive Store;
- Asbestos dump;
- Forklift Shed;
- Coal and Oil Storage Area;
- Kiln Sand; and

- General Areas.

Quarry Area (West)

- Machine and Blacksmith Shop Area;
- Quarry Tailing Dump Areas; and
- General Areas.

A contaminated land search undertaken through Environment ACT Environment Protection Unit (EPU) indicated the site is recorded on the database as potentially contaminated.

The EPU supported the recommendations of the Connell and Wagner stating '*it would oppose any change in land use from brickworks until the site is assessed and independently audited by a contaminated land auditor'*.

The key findings of the investigation are summarised below:

- Fill was identified across the site and was observed to comprise bricks, clay and slag.
- TPH exceedances were reported at a sample location proximal to the Machine Bay 3. The exceedance was attributed to temporary fuel storage at this location.
- A single lead exceedance was reported in a surface sample of sands adjacent to the kiln. The source of the impact was unclear, but was considered attributed to the glaze used in brick making.

Robson recommended that an appropriate environmental assessment be designed once the future land use is confirmed. The assessment may include further investigations and/or remedial work of the AEC's identified.

3.1.4 Robson Laboratories (March 2006)

Robson Laboratories in March 2006 completed a report entitled, "Survey to Determine the Extent and Condition of Hazardous Building Materials at Yarralumla Brickworks", this was a non–destructive survey and sampling was therefore limited to accessible materials. The objective of this report was to give a detailed list of hazardous materials that were identified and included the following:

- Friable asbestos;
- Bonded asbestos;
- Lead-paint;
- Synthetic mineral fibre; and
- PCB capacitors to fluorescent light fittings

Areas excluded from the inspection (due to access) included:

- Asbestos pipe lagging set into masonry walls;
- Wall Cavities – original asbestos sheeting, debris and insulation ;
- Areas which contain inaccessible building rubble;
- Plant equipment – asbestos gaskets;

- Subterranean areas and asbestos sheet fragment packers; and
- Hot water heaters – asbestos beneath Synthetic Mineral Fibre Insulation

Based on the site survey and analytical results, Robson recommended the following:

- Structures should be removed as soon as practicable (e.g. top level Kiln 2).
- Other structures which are in poor condition should be removed by an ACT licensed asbestos removalist as soon as practicable (e.g. external wall sheets of the building atop Kiln 3, corrugated roof sheet on building A3.
- Dumped material on the western end of the site would need to be removed prior to any further site development due to contamination.
- Lead paint identified on the windows frames of the top floor of the former canteen building is in poor condition and should be removed or encapsulated to prevent further deterioration.
- All the Synthetic mineral fibre should be removed as soon as practicable as asbestos waste.
- If it is decided to demolish or excavate the exclusion areas, care should be taken to determine the existence of asbestos. If asbestos is located, all works must cease and an ACT licensed asbestos removalist should be contacted immediately to remove this material prior to completion of the job.

3.1.5 Lovell, Chen – Architects & Heritage Consultants (March 2010)

Lovell and Chen prepared a Conservation Management Plan (CMP) for the Canberra Brickworks, the CMP built upon previously undertaken by Lester Firth (1986) and provides a more recent and detailed account of the history of the brickworks.

One of the main objectives of this Management Plan is to support a sensitive approach to potential future change and the implementation of an adaptive reuse and redevelopment strategy that is both feasible and will support the long-term conservation of the core heritage values of the place.

The Management Plan includes:

- The Process of Brickmaking;
- History and Physical Analysis;
- Assessment of Significance; and
- Conservation Policy and Management Plan.

This Plan highlights facilities, which could have environmental impact on the site:

- Quarry;
- The power house (concrete floor);
- Coal storage shed (later model railway storage shed);
- Demolished structures: (the location of some is unclear):
    - clay storage shed;
    - carpenter's shed;

- oil/fuel and coal bunkers (onsite and offsite);
- weighbridge;
- forklift shed;
- temporary kilns;
- brickworks workers accommodation (includes Hostel and Camps);
- explosives store; and
- a weatherboard cottage.

The CMP concludes with the recommendation that these sites should be investigated as part of a broader archaeological assessment of the site and abutting land.

3.1.6 Robson Laboratories (May 2010)

Robson Laboratories in May 2012 prepared a proposal entitled "Review of Past Site Works and Indicative Costing's for Further Assessment and Remediation".

The proposal refers to an environmental assessment report titled Robson (2006) *Remediation Action Plan (Draft), Asbestos Dump, Yarralumla Brickworks, Block 1 Section 102 Yarralumla, Canberra Central ACT* (Robson report reference 3144_CL_RAP_20061109, dated November 2006). The summary stated:

> *In 2006, Robson prepared an environmental assessment report titled Robson (2006) Remediation Action Plan (Draft), Asbestos Dump, Yarralumla Brickworks, Block 1 Section 102 Yarralumla, Canberra Central ACT (Robson report reference 3144_CL_RAP_20061109, dated November 2006). The Remediation Action Plan (RAP) was prepared so as to facilitate the safe and effective removal of all waste from the asbestos dump area so that the waste no longer poses a risk to human health or the natural environment.*
>
> *Three broad phases of work were proposed for the remediation of the asbestos dump including:*
>
> - *Vegetation removal, including prior organisation of work permits and preparation of a Sediment and Erosion Control Plan and a Project Health and Safety Plan;*
> - *Removal of hazardous materials and recyclable wastes, including waste classification and validation of the remediated area; and*
> - *Site reinstatement, including importing validated fill material and revegetation.*

Limited remedial works of the asbestos dump area were subsequently undertaken by Robson in June and July 2007, with approximately 50m3 of asbestos waste being removed from the site. Remedial works were ceased when:

> *A 'Prohibition Notice' was served by a delegate of the ACT Planning and Land Authority (ACTPLA) on the grounds that the excavation work was being undertaken without development approval. At the time that work ceased it was assessed that potentially 500m3 of asbestos waste remained in the dump area.*

3.1.7 Robson Environmental (October 2010)

Robson in October 2010 completed a report entitled, "Hazardous Material Survey and Management Plan". The objective of this report was to assure the occupants of Yarralumla Brickworks the highest standards of occupational health and safety in relation to hazardous materials. The survey involved a visual inspection non-destructive and non-intrusive in nature of accessible, representative materials, therefore limited to the following areas:

- Interior and exterior of the building;
- Roof, amenities and immediate surrounding land; and
- UST filler points and breather vents (near kiln 1).

The survey did not include the inspection or assessment of the following areas:

- Subterranean areas (e.g. infill/soil);
- Concealed cavities; and
- Formwork and subterranean electrical cable ducts and water pipe ducts.

The key findings of hazardous materials were:

- Asbestos (friable, bonded);
- Lead paint;
- Synthetic mineral fibre;
- Polychlorinated Biphenyls (PCB);
- Ozone Depleting Substances (ODS); and
- Aboveground Storage Tank (near Machinery Shed 3) and Underground Storage Tank (near Kiln 1).
    - Note that, the AST and UST identified by Robsons (2010) were not sighted during the fieldwork component of the PSI.

The key recommendations of this report were:

- All Asbestos Containing Material should be removed by an ACT licensed Asbestos Removalist. Also, the area where this material was found should be cleaned by this removalist.
- All SMF, Lead Paint, PBC and ODS contaminated related material should be removed using effective control procedures and disposed in accordance with the ACT regulatory authorities.
- As access to some areas was not permitted, it should be presumed that any similar materials located in these areas could be contaminated until proven otherwise.
- In terms of the Underground Storage Tank, further investigation is required to establish whether or not is still in place and its condition.

3.1.8 Robson Environmental (February 2012)

Robson Laboratories in February 2012 completed a second report entitled, "Hazardous Material Survey and Management Plan" at the Canberra Brickworks. The objective of this report was to present the findings of a Hazardous Material Survey conducted at Canberra Brickworks, Yarralumla. Also, ensures that the safe removal of hazardous materials must be undertaken by appropriately licensed and skilled personnel prior to the demolition of the premises. The survey undertaken at Canberra Brickworks involved a visual inspection non-destructive and non-intrusive in nature of accessible, representative materials, therefore limited to the following areas:

- Interior and exterior of the building
- Roof, amenities and immediate surrounding land.
- UST filler points and breather vents.

The key findings were the same as previous reports, with a more specific report in terms of identification of the hazardous materials, location and the actions which have to be taken in order to eliminate the hazard.

3.2 Historical Aerial Photographs

Historical aerial photographs were obtained and reviewed to investigate the former land uses and development at the site. Aerial photographs dated between 1951 and 2012 were obtained and reviewed.

The historical aerial photographs are presented in Figure 3a to 3k, **Appendix A**. Remnant features still visible today are presented in Figures 2 and 2a, **Appendix A**.

Table 3-1 Historical Aerial Photography

Year	Site Description
Figure 3a 1951 Run 2 Print 5102	The Site: Quarry, Power House, Staffordshire Kiln (Kiln 1), Fan House and Chimney Stack for Kiln 1, Offices, Hardy Patent Kiln (Kiln 2), Fan House and Chimney Stack for kiln 2, Amenities Block also present. There are some visible buildings and sheds surrounded by trees east, north and south (Workers Accommodation) of the Site. The railway line and several roads are visible including Denman St. Several unnamed roads leading to the brickworks, quarry and the former workers accommodation are also visible in the imagery.
	The Surrounding Area: to the north trees/orchids associated with early arboretum works including the Westbourne Woods to the west. Development of Yarralumla suburb to the east and vacant land to the south also observed.
Figure 3b 1958 Run 7 Print 5060	The Site: presence of new buildings. A third kiln has been established on the Site (Hardy patent Kiln), Chimney stack for Kiln 3, Machine Bays (I, II and III), Workshop building, Crusher Houses and the Elevator/Conveyor. Additional structures observed at the former brickworks workers accommodation, the quarry has also been expanded. Shed like structure observed west of the brickworks and north of the railway line, possible location of the explosives store.

Year	Site Description
	Small building south and east of the brickworks, probable location of the Carpenters Shed. Exposed soils observed further south and east of this location.
	The Surrounding Area: further development of the surrounding areas.
Figure 3c 1968 Run 9 Print 8708	The Site: a large shed has been built on the west of Power House and became the Downdrafts Kilns (Kilns 4-6). The railway line is starting to be overgrown with vegetation. The quarrying activity is more evident. Appears to be some stockpiling of material west of the quarry. Clay storage shed observed in the quarry area Area of exposed soil south east of the brickworks previously noted (1968) remain, purpose is unclear however the area may have be used for the storage of materials. Cleared area 50m south east of the Power House, location of a former carpenter's workshop appears to be used as a carpark. Plantings of trees in the southern portion of the Site evident. Rows of trees also planted south adjacent to Denman St. Earthworks associated with the Cotter Road and Yarra Glen overpass observed.
	The Surrounding Area: further development of Yarralumla to the east, establishment of the Royal Canberra Golf Course to the west and the suburb Curtin to the south. Some buildings have been established north of the Site. Lake Burley Griffin has been filled.
Figure 3d 1978 Run 15 Print 49	The Site: removal of clay storage shed, workers accommodation buildings, forklift shed and several other buildings. The quarry appears to have been also been filled. Extrusion plant has been constructed. Disturbed soils observed in the north western portion of the Site, this is the location of the current asbestos dump. Cleared area south east of brickworks (noted 1958 and 1968) appears to be used for stockpiling. The vegetation around the former railway corridor and brickworks workers accommodation increased. The railway corridor is barely visible in the image.
	The Surrounding Area: Consistent with 1968. Cotter Road and Yarra Glen overpass construction completed. CSIRO School of Forestry established (NE of the site).
Figure 3e 1988 Run 15 Print 6251	The Site: roofing material of the kilns and workshops has been upgraded. Tracks observed in the quarry, the carpark (formerly the carpenter's workshop) is disused and overgrown with grass. Former workers accommodation and railway corridor completed overgrown with vegetation.
	The Surrounding Area: No significant changes, housing constructed to the northern and eastern boundary of the Site
Figure 3f 1998 Run 5 Print 0137	The Site: asbestos dump appears covered with vegetation. Quarry area grassed with the reestablishment of trees. Some minor tracks (pedestrian) appear to bisect the central areas of the Site.
	The Surrounding Area: No significant changes.
Figure 3h 2012 Aerial Imagery	No significant changes from previous years.

Year	Site Description
ACTmapi	

A review of the available aerial photographs indicates the Site has a history of industrial land use associated with the operation of the brickworks between 1913 and 1976. Some features of the brickworks have been demolished since its closure. The review did not provide any data pertaining to the depth of the quarry or the nature and/or extent of filling activities.

With the exception of the construction of road infrastructure, the southern portions of the Site remain largely unchanged.

3.3 ACT ESDD Contaminated Land Search

A search of the Environment and Sustainable Development Department (ESDD) Contaminated Land Search database indicated that following blocks were recorded on the ACT EPA contaminated sites management database:

Blocks 1, 7 and 20 Yarralumla Canberra Central (the brickworks, quarry and the former workers accommodation areas)

The search identified the presence of an abandoned commercial brickworks. The EPA have reviewed and gave their support to the recommendations made in the Phase 1 assessment report prepared by Connell and Wagner (2001). The Phase 1 recommended that further investigation, validation and remediation would be required.

The EPA stated '*it would oppose any change in land use from brickworks until the site is assessed and independently audited by a contaminated land auditor'*.

The search also indicated the block may contain fuel storage facilities and asbestos containing materials. Worksafe ACT should be contacted regarding the status of any fuel storage facilities and asbestos abatement plans.

The search indicated that a draft remediation action plan for the remediation of identified asbestos material in soil was received by the EPA in 2007. The RAP was not available at the time this PSI report was prepared, the area subject to remediation has identified as an area of environmental concern in this PSI and shown on Figure **Figure 2a, Appendix A.**

Block 4 Deakin Canberra Central (the Southern Area)

The block is not reported on the EPA's contaminated sites management database or geographic information system.

Records indicate the block is occupied by public playing field and that playing fields have (in the past) been associated with contamination due to the application of chemicals for the control of weeds and pests. The storage of herbicides/pesticides may also have occurred at the block. There is potential for uncontrolled fill to also be present at public playing fields.

Copies of the ACT ESDD Contaminated Land Search results are provided in **Appendix F**.

3.4 Dangerous Goods Records Search

A search of the Dangerous Goods Act 1975 and Dangerous Substances Act 2004 maintained by Worksafe ACT did not indicate the presence of any stored dangerous goods or underground storage tanks (USTs).

The search indicated that tanks containing diesel less than 50 000 litres were not required to be licensed with Worksafe. A copy of the search is provided in **Appendix G**.

3.5 Site Inspection

3.5.1 Visual Observations

An inspection of the Site was undertaken by SMEC during the fieldwork component of the PSI. The purpose of the inspection was to identify areas of environmental concern. Photographs taken during the Site inspection are included in **Appendix H**.

Observations made during the inspection are summarised below:

Brickworks

Large portions of the brickworks were occupied by Thor's Hammer a wood recycling business (Photo 1, **Appendix H**) and were used for the storage of bulk wood supplies, it is understood that artists also utilise some workshop spaces at the brickworks. Thor's Hammer and the artists were observed to be operating in Machine Bay 1 and the Workshop (Figure 2a, **Appendix A**), other areas of the brickworks (both sealed and unsealed) were used for wood storage as shown in Figure 2b, **Appendix A.**

An inspection of the chemical storage areas used by Thor's Hammer and artists was undertaken by SMEC on 12/2/2014. The chemicals stored at the brickworks included varnishes, wood finishes, paints, oils and hydraulic fluid (for wood working machinery). These chemicals were kept in a lockable shipping container and steel storage cabinets, good housekeeping was observed with no staining evident. These storage areas were typically located in Machine Bay 1 (Figure 2a, **Appendix A**) on a sealed concrete surface.

Remnant buildings associated with the operation of the brickworks were observed to be in various conditions ranging from good to some buildings showing signs of disrepair. (Photo 2, **Appendix H**).

A hazardous material assessment was outside the scope of this PSI; however a brief inspection generally indicated good housekeeping with no obvious staining or visible waste observed. Robson Environmental Pty Ltd has prepared several hazardous material surveys for the brickworks (March 2006, October 2010 and February 2012) a summary of these reports is provided in **Section 3.1** of this PSI.

External areas comprised gravelled vehicular tracks, grassed and concreted areas. The condition of concrete varied presumable based on the age of construction. Occasional fragments of potential ACM were observed during the Site inspection of the brickworks and quarry areas.

A network of concrete drains was observed around the building; although generally dry, some sheen was observed in drains around Machine Shed 1 (Photo 3, **Appendix H**). The source of the sheen is unknown but is likely oily wash from the nearby workshop. The drains are likely to receive wash from the former operation of the brickworks and the current use of the workshops. It is expected that the infrastructure drains to the local stormwater system.

Remnant structures of the former crusher plants were noted, some rusted oil drums (labelled *'lubrication oil'*) were observed in this area (Photo 4, **Appendix H**), no staining and/or odours were observed. Inspection of this area (and others) was limited by the presence of dense woody weed species (blackberries).

General areas around the machinery sheds were littered with empty drums, scrap metal and other waste materials (Photo 5, **Appendix H)**. No obvious signs of ACM, staining and/or odours were noted during the inspection.

A disused oil pressure/storage tank was identified at the rear of Machine Shed 3 (Photo 6, **Appendix H)**. It was located adjacent to the concrete footings of removed plant machinery. No odours or staining were observed however Robson (2006) identified TPH impact at nearby at location BH14.

Historical data indicated the presence of a 1000 L petrol UST between the former forklift shed and Fan House 2. A visual inspection did not identify any vent pipes, dispensing pumps, concrete pads or remote filling points. The base of the former building was littered bricks and demolition waste (no observed ACM) limiting the inspection.

The asbestos dump was contained within a fenced exclusion area which prevented access. The area was also observed to be overgrown with weed species which prevented inspection of surface soils. A septic tank servicing the brickworks is also located in the fenced exclusion area. It is considered likely that the septic tank is still connected to the brickworks and possibly the former workers accommodation.

Quarry

The quarry was observed to comprise levelled grassed areas, natural limestone and shale knolls, and several fill mounds. The original depth of quarry is unknown and has been backfilled to level approximately 3 m higher than the ground level within the adjacent former brickworks (Figure 2c, **Appendix A**).

The artificial lake located in the northern portion of the quarry was observed to be dry and appeared to have been formed from a shallow (approximately 1 m) depression. The base of the lake appeared to be bedrock with shale outcroppings, the walls of the lake appeared to be constructed from reworked soils.

Two large fill mounds comprising reworked natural soils, brick waste and excess quarried rock. Fragments of potential ACM were observed in the northern fill mound (Photo 7, **Appendix H)**.

It is expected that surface water in the quarry would either infiltrate fill material or drain towards the artificial lake. A surface drain was observed in the north western portion of the quarry that drained to the brickworks, Figure 2c **Appendix A**. The exact purpose of the drain is unknown but may have been constructed for the following:

- To redirect surface water (from the north and north east) away from the quarry (towards the brickworks) to protect mining activities; and/or
- To receive the overflow from the artificial lake.

Once discharged to the brickworks surface water either infiltrate sub-surface materials (probable fill material) or flow towards the brickworks drainage infrastructure.

Surface fragments of potential ACM were also observed in the southern portion of the quarry, the potential ACM appeared to be associated with gravelly fill comprising crushed brick and concrete used to construct the track.

Former Workers Accommodation

Several demolished brick buildings and footings were observed in the former workers accommodation (Photo 8, **Appendix H)**. The demolition waste generally comprised bricks, metal and concrete, occasional fragments of potential ACM were also observed.

The exact location and extent of the former building could not be established during the inspection due the presence of overgrown grass and woody weeds. The approximate location of the former buildings identified from a review of the available reports (**Section 3.1**) is provided in Figure 2b, **Appendix A**.

An interceptor type structure (Photo 9, **Appendix H**) adjacent to a demolished building (likely location of the former kitchen/mess hall) indicates that underground services/structures are still likely to be present. The interceptor likely received grease and fats from the kitchen/ mess hall operations, no odours and/or staining was observed. It is probable that the interceptor drains to the brickworks, and then subsequently the local stormwater system.

An abandoned vehicle (Photo 10, **Appendix H**), dumped materials (wood, metal and general waste), a fridge and multiple mounds were observed in the area, a detailed inspection of these features was limited by dense vegetation.

The railway corridor(s) was observed to be bare, with no remnant infrastructure (railway lines or treated wooden sleepers).

A cleared area with patches of asphalt was observed adjacent to the workers accommodation, no mounding or dumped materials were identified. The purpose of the area is unclear but may have been used for storage of materials.

Southern Areas

The Southern Areas of the Site were observed to comprise tree plantings (pine species) and open grasslands with several major roads (Dudley St, Cotter Rd and Adelaide Avenue) that bisect the Site east to west. It is considered probable that this fill was imported to meet the designed Cotter road grade.

Plantings of deciduous trees were observed north adjacent to Denham St and west near the Royal Golf Course. Slashing and mulching activities in the western portion of the area were noted during the PSI.

The available historical data (Lester and Firth, 1986) indicated that the southern areas of the Site were denoted as “Gibbes Paddock’ and was likely used for grazing as part of the larger Yarralumla property. The potential for contamination from grazing practices is considered low. A grove of trees was also observed adjacent south to Denham St in the central portion of the Site.

Since then several tree groves (predominately pine) have been planted throughout the central and southern areas of the Site, as shown in Figure 2, **Appendix A**. The trees appeared to be in good health with no obvious signs of stress.

Remnant portions of the railway corridor were observed in the western portion of the area. No ballast or other infrastructure was noted during the inspection; it is likely that the rail line and sleepers rested on the site’s soils.

Two concrete lined pits were located adjacent to remnants of an unnamed vehicle track (currently used by pedestrians and cyclists). Some broken tiles and glass bottles observed at the base of the pits, which appeared otherwise empty (Photo 11 and Photo 12, **Appendix H**). The purpose of the pits was unclear; however, it was considered likely that they were used to retain stormwater run-off from

the adjacent unnamed road. The potential exist for possible impacts from spills/leaks from vehicles (formerly using the track) and wash form the surrounding area.

A diffuse waste pile was identified in the south east portion of the Site adjacent Yarra Glen (city bound). The pile comprised mostly bricks, metal, and general waste and was estimated to be around 10 m^3 in total volume (Photo 13 **Appendix H**). Several fragments of potential ACM were also identified in and around the pile.

3.5.2 Interview with Thors Hammer

On the 12 February 2014, SMEC undertook an interview with Mr Thor Diesendorf the proprietor of the Thors Hammer since 1984 regarding his knowledge of historical or recent potentially contaminating activities. A summary of the interview is provided below:

- Mr Diesendorf was not aware of any contaminating activities to have occurred at the brickworks during the operation of Thor's Hammer, however some vandalism (spray painting) had been noted;
- It was highly unlikely that any treated woods have been stored or used as part of the business given the regulations around the reuse of these materials (arsenic (copper chrome arsenate), creosote and/or OCP treated timbers); and
- Mr Diesendorf did however indicate that small amounts of creosote treated timber and painted (potentially lead based) timber could have been reused over the years.

General woodworking chemicals were kept on the premises this included, varnishes, finishes and paints. Some oils and hydraulic fluids were kept for maintenance of the woodworking machinery (lathes, wood saws etc). These chemicals were kept in a lockable shipping container and steel storage cabinets, good housekeeping was observed with no staining evident.

3.6 History Summary

1913-1976: A review of the available site history and background data indicated that the northern portion of the Site has a history of industrial land use centred around the operation of the Canberra Brickworks from 1913 until its closure in 1976.

1976 -1984: Since its closure, there has been one attempt to redevelop the brickworks by A.R Marr Pty Ltd. It was envisaged that the brickworks and surrounding area would be redeveloped as a major tourist complex with associated housing. A artificial lake, and a model railway was constructed in the quarry at this time. Several storage sheds including a Model Railway Workshop were located adjacent to the wall separating the brickworks and quarry. The Model Railway Workshop was formerly used for the storage of coal/oil. The locations of these features are presented in Figure 2b and 2c, **Appendix A**.

1984-Current: Areas of the brickworks are currently leased by Thor's Hammer a wood recycler and local artists. Given the limited available historical data since the closure of the brickworks (1976 to Current) there is the potential for dumping (illegal or legal) and/or vandalism to have occurred.

The remainder of the Site is comprised of open grassland, forests and several major roads.

Previous Environmental Investigations: Two limited environmental investigations have been undertaken by Connell and Wagner (2001) and Robson Environmental Pty Ltd (2006). Robson completed 21 boreholes across the brickworks and quarry, as no GPS data was provided the approximate borehole locations of the investigation are provided in Figure 4, **Appendix A**.

The inclusion of the Robson (2006) data is not considered to add a significant amount of certainty/data for future assessments given:

- The lack of GPS coordinates for the boreholes (this would add uncertainty);
- The age of reported data, as the condition of the site may have changed since the publication of the report.

3.7 Contaminants of Potential Concern

The historical data review completed by SMEC has identified the following contaminants of concern (CoPC) that may be present at the Site.

Table 3-2.6 Contaminants of Concern

CoPC	Context
Asbestos Containing Material (ACM), Asbestos Fines (AF) and Fibrous Asbestos (FA)	Asbestos cement materials present (sheet, conduits, flooring tiles etc) in Site buildings. May be present in fill material containing demolition waste from former buildings. Asbestos also may have used in vehicle and locomotive (light rail and trams) brake pads used during operation of the brickworks. Asbestos is also present in the asbestos material dump area.
Benzene, toluene, ethylbenzene, xylenes (BTEX)	Volatile organic compounds (VOC) present in petroleum based fuels, oils and solvents. May be present in solvents, paint strippers and rubber cements. Potential for former use associated with the operation of the workshops and/or former carpenters shed.
Creosote	Wood –tar or coal-tar creosote used for wood preservation. It is toxic to fungi, insects, marine borers and is a water repellent and it's typically applied to pilings, telephone poles, power line poles and fence posts. Storage of creosote treated woods may have been associated with operation of Thors Hammer. Contains variable percentages of aromatic hydrocarbons (PAH and BTEX) and phenols.
Explosives	Potential for nitrogenous organic explosives (TNT etc.) to have been stored and used to advance the quarry. Given the uncertainty around the specific explosives, analysis of a broad suite of explosives compounds may be necessary. Potential for metals (e.g. mercury fulminate) to have been used as detonators.
Metals and Heavy Metals (HM)	Potential for elevated natural occurring metal concentrations in Site soils. Anthropogenic impacts may be associated workshop activities (machinery maintenance/servicing and welding), deterioration of metallic objects, pesticides, herbicides (arsenic) and general industrial practices. Elevated metal concentrations may be present in fill associated with practices described above.
Nutrients	Discharge of nutrient rich wastewater into unsaturated soil above the water

CoPC	Context
(fixed nitrogen (all forms), phosphorus, and faecal coliforms)	table. Transport of wastewater can occur via surface water flow and infiltration. Potential for nutrient impacts arising from the septic tank located at the brickworks. The septic tank is first show in the 1954 site plan (Lester and Firth 1986) with a long history of use (+50 years).
Herbicides and Pesticides including: Organochlorine Pesticides (OCP), Organophosphorus Pesticides (OPP)	OCPs are persistent and bioaccumulation in the environment formerly used as pest control to crops, livestock and buildings. OPPs used since the banning of OCP in Australia. Potentially used in building footings, rail corridor and across the Site for pest control. Can be present in uncontrolled fill.
Oil and Grease	Oil and grease present fuels, motor oils, lubricating oil, hydraulic oil, animal-derived fats and cooking oil. Human and ecological toxicity varies between types of oil and grease. Contains various hydrocarbons that can pose a range of health risks. Typically insoluble in water. Likely used to operate and maintain machinery at the brickworks, potential impacts to soils and receiving water bodies.
Phenols	Phenol is generally synthesized as a manufacturing chemical, primarily used as a resin and in the production of plastic and synthetic materials. May occur naturally as a constituent of coal tar and decomposing organic material. Potentially used in workshops, may be present in uncontrolled fill.
Polychlorinated biphenyls (PCB)	PCBs were formerly used a coolants and insulating fluids for electrical transformers, and capacitors. Robson (2006, 2010 and 2012) identified the presence of PCB containing material in the existing buildings of the brickworks.
Polycyclic aromatic hydrocarbons (PAH)	Can occur naturally in crude oil, coal and incompetently burnt carbon materials (wood, coal, diesel etc) and ash. Used in the production of bitumen and asphalt material, can be present in fill of unknown origin.
Petroleum hydrocarbons (TPH)	Present in fuels (petrol, diesel, and kerosene) solvents and oils. Potential for TPH impacts sourced from the operation of the brickworks (workshops, machinery, USTs), spills from vehicles and in uncontrolled fill.

3.8 Areas of Environmental Concern

Based on the Site history review and field observations the following AECs identified at the Site are summarised below in Table 3.3.

Table 3-3 Areas of Environmental Concern

AEC	Description	Comments

AEC	Description	Comments
1	Waste Fill (locations where fill is present)	Likely contained to the brickworks and quarry. Fill in these area was observed to comprise reworked natural soils, brick waste, ash waste, bitumen, demolition waste often with other anthropogenic inclusions (including metal, concrete, wood but not plastic). Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicides, Pesticides and Asbestos impacts in soil. Potential for contaminants to leach to the groundwater.
Former Brickworks		
2	Recycled Timber Storage (Thor's Hammer)	Parts of the brickworks are currently used for the storage of recycled (possibly treated) timber associated with the operation of Thor's Hammer. Potential for to metal impacts leaching from treated timbers. Potential for HM, creosote and Pesticide impacts in soils.
3	UST(s) Forklift Shed (former)	Historical data indicates a 1000 L petrol UST was located between the former forklift shed and adjacent fan house (Fan House 2). Robson (October 2010) reported the presence of UST filling points and breather vents near Kiln 1. A small empty above ground storage tank was also identified near Machinery Shed 3. These features were not identified during the PSI; further investigation is recommended to determine the presence and condition of the storage tanks discussed above. Potential for TPH, BTEX and lead impact in soils and/or groundwater. Potential for TPH, BTEX, PAH, HM and asbestos impacts in the soils at and/or near the former forklift shed.
4	Stackhouse(s)	Ash waste from combustion of wood, coal and oils. Potential for PAH impact in ash waste present in uncontrolled fill across the brickworks and quarry. Storage of coal material observed adjacent to Fan House 2. Potential PAHs impacts in and around stackhouses and coal storage areas. Potential for contaminants to leach to the groundwater.
5	Explosive Store (former)	The former explosives store (160 m west of the Power House) was assessed in this PSI and by Robson (2006). Potential for impacts from explosive compounds impacts in shallow soils. Potential for contaminants to leach to the groundwater.
6	Machinery Shed(s)	Includes blacksmith's workshop attached to Machine Shed 1. Possible spills and leaks from use of oils and solvents. Deteriorating metal waste present in and around the workshops. Leaks and spills likely to wash towards surrounding soils and/or into surrounding drainage infrastructure. Potential for TPH, BTEX, Oil, Grease, PAH, Phenols and HM impacts in soil, surface and groundwater.

AEC	Description	Comments
7	Operation of Crusher and Refinery Plant(s)	Potential for hydrocarbon impacts from spills and leaks from machinery used for crushing and transporting of raw material. A diagrammatic representation of the brick making process (1960) is presented in **Appendix E**. Robson (2006) reported elevated concentrations of TPH at sample location BH14 in this general area. Potential for TPH, Oil, Grease, BTEX and PAH impacts in soil and/or groundwater.
8	Coal/Oil Storage Facility(ies)	An aerial image in the Lovell Chen CMP (page 168) indicates the presence of 2 large above ground storage tanks at the building most recently used as the Model Railway Shed during the A.R Marr lease of the Site (1976 to 1984). It is currently an unsealed empty shed. Another former coal/storage facility was identified by Robson (2006), it was observed to be a remnant steel structure, the surrounding area was observed to be sealed (concrete) with no obvious signs of staining/and or odours. Potential for TPH, BTEX and PAH impacts in soil and/or groundwater.
9	Kiln Sand	Potential lead contamination. Historical data recorded an elevated concentration of lead (770mg/Kg) in a Kiln sand sample. Likely restricted to within the kilns but potentially deposited through fill material within the brickworks and quarry. Potential for HM impacts.
10	Asbestos Dump	ACM material and fill dumped west of the brickworks, observed to be contained within an exclusion fence and overgrown with dense woody weed species (blackberry bushes). Estimated to be 500 m^3 (Robson 2010). SMEC understands that the Robson Environmental Pty Ltd have prepared and will be implementing a Remediation Action Plan for the asbestos dump. The remedial area is show in Figure 2a, **Appendix A**. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicide, Pesticide and Asbestos impacts in soil. Potential for contaminants to leach to the groundwater.
11	Septic Tank	Robson (2006) identified the septic tank as an AEC. The septic tank servicing the brickworks is located in the asbestos dump fenced exclusion area and was not inspected as part of the PSI. Nutrients, (phosphate and or nitrate / nitrite impact to groundwater), HM and faecal coliform impacts to soil and groundwater.
12	Carpenters Workshop (former)	Possible spills/leaks associated with workshop activities (use of oils, solvents and/or resins). Demolition waste may contain ACM. Potential for TPH, BTEX, PAH, Phenols and Asbestos impacts in soils.
13	Former Kiln(s)	Possible presence of demolition waste containing ash, kiln sand, and ACM. Potential for HM and Asbestos impacts in soils.

AEC	Description	Comments
14	Fill Mound(s)	Two fill mounds were identified immediately south of the quarry fence. A detailed inspection of the mounds was limited by the presence of grass. The mounds may contain demolition waste from nearby former structures (temporary kilns and the carpenters shed). Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicides and Pesticides and Asbestos impacts in soil. Potential for contaminants to leach to the groundwater.
15	Weighbridge (former)	Former weighbridge used to weigh imported raw materials, Lester Firth & Associates (1986) report the concrete pit as remaining and has since been filled with material of unknown origin. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicide, Pesticide and Asbestos impacts in soil.
16	Power House and Underground Conduits	Constructed 1915-1916, also referred to as the Power Station (Lovell Chen 2010) was used to breakdown the high voltage supply from the Kingston Power House. The Power House distributed power across the Site via underground electrical conduits (1916 Historical Plan, **Appendix E**). PCBs and Asbestos materials potentially to have been used in the Power House, potential for impacts to nearby soils. The underground electrical conduits are also potentially constructed of Asbestos materials.
17	Boiler House and adjoining Substation (former)	Constructed in 1971 to service the adjacent brick extrusion plant increasing the brick production capacity. Only operational for 5 years. All internal infrastructures have since been removed. It is unknown if the boiler was fuel (wood, coal or oil) or electricity driven. Potential for PCB, TPH, PAH and Asbestos impacts in soil.
Former Quarry		
18	Fill Mound(s)	At least two large fill mounds within the quarry were identified; it is likely the mounds are comprised of reworked soils, brick waste and quarry overburden. Fragments of ACM were observed in the northern fill mound. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicide, Pesticide and Asbestos impacts in soil. Potential for contaminants to leach to the groundwater.
19	Clay Storage Shed (former)	Shed structure used to store clay. TP23 targeted this location; fill was logged to a depth of 1.5 mbgl and comprised sandy clays and silts with gravels, bricks and shale pieces. Potential for Asbestos impacts in soil.
20	Weatherboard Cottage (former)	Located approximately 20 m east of Crusher 3 (Lester Firth and Associates). A coal store and stable were attached to the cottage, demolished prior to the 1920s.

AEC	Description	Comments
		Potential for PAH and Asbestos impacts in soil.
Brickworks Workers Accommodation		
21	Workers Accommodation (former) – General Areas and Former Buildings	Area included camps and later the workers accommodation (both demolished). Several demolished brick buildings and footings were observed in the former brickworks workers accommodation. The demolition waste generally comprised bricks, metal and concrete, occasional fragments of ACM were also observed. Several small fill mounds were also identified in the general area; inspection of the mounds was limited by the presence of grass cover. Detailed inspection of the area was negated by the presence of grass and woody weed species, potential for unidentified building footprints, fill and dumped materials. Potential for fill of unknown origin to be present throughout the former workers accommodation. The approximate historical location of the former building is provided in Figure 2b, **Appendix A**. Assessment of AEC 19 should include the location of these former buildings. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicide, Pesticide and Asbestos impacts in soil. Potential for contaminants to leach to the groundwater.
22	Interceptor Pit	A triple interceptor type structure identified adjacent north to the former kitchen/mess hall building likely to receive oils, domestic chemicals and food wastes. Potential for TPH, PAH, Oil, Grease and Phenol impacts in soil. Potential for contaminants to leach to the groundwater.
23	Abandoned Vehicle	An abandoned vehicle overgrown with woody weed species was identified, potential for hydrocarbon impacts and heavy metal impacts (deterioration of metals). Potential for TPH, BTEX, PAH and HM impacts in soil. Potential for contaminants to leach to the groundwater.
24	Dumping Area	Area of dumped materials including wood, rusted metal containers, a tar drum, electric fuse box and general waste (plastic, wood and metal pieces). Possible location of a former building. Potential for TPH, BTEX, PAH, PCB, Phenols and Asbestos impacts. Potential for contaminants to leach to the groundwater.
25	Scrap Metal Stockpile	Stockpile approximately 10m x 8m, volume difficult to determine inspection limited by woody weeds. Observed to contain reworked soils, sheet metal, bricks and an old fridge. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, and Asbestos impacts in soil.
26	Fill Mound	A large stockpile 50m^3 observed adjacent to brickworks boundary fence. Observed to comprise reworked soils, rusted metal (sheets and pipes), concrete and bricks. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicide, Pesticide and Asbestos impacts

AEC	Description	Comments
		in soil. Potential for contaminants to leach to the groundwater.
27	Cleared Area	Large cleared area with patches of asphalt was observed adjacent to the workers accommodation, no mounding or dumped materials were identified. The purpose of the area is unclear but is identifiable on historical plans since the 1920s; more recent uses may include the storage of materials. Fill was logged to a depth of 0.5 mbgl and comprised sandy clay with gravels, glass and bitumen. Potential for TPH, BTEX, PAH, and HM impacts in soil.
28	Explosive Store (former)	Lester Firth & Associates reported that the original explosives store was located 180 m south of the current Power House, and was later relocated 160 m west of the Power House. Potential for impacts from explosive compounds in soils and/or groundwater.
Southern Areas		
29	Rail Corridor	Former railway corridor used to transport bricks to parts of Canberra. Historical data also indicated temporary tramways were operated inside the quarry. Contamination may include treated timber sleepers (pesticides), asbestos from brake pads and vegetation control (in corridor). Potential for Herbicide, HM and Asbestos impacts in soil.
30	Vehicle Tracks (site wide)	The Site contains multiple vehicle tracks (current and historical). Potential for hydrocarbon impacts from oil/fuel spills and leaks. Assessment should include areas likely to receive wash (drains, low points etc). Potential for TPH, BTEX and PAH impacts in soil.
31	Waste Pile	A small waste pile (around 10 m^3) was identified near Adelaide Avenue. Material comprised bricks, metal, and general waste (plastics and cardboard). Several fragments of potential ACM were identified at this location. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicide, Pesticide and Asbestos impacts in soil. Potential for contaminants to leach to the groundwater.
32	Fill (Road)	Fill materials comprising silty cobbles to gravelly sand with traces of brick and bitumen was logged at TP02 until refusal at 2.0 mbgl on a large piece of concrete. The nature and extent of fill is unknown but is likely attributed to filling required meet the design grade of the Cotter rd and Yarra Glen overpass. Potential for TPH, BTEX, PAH, Phenols, PCB, HM, Herbicide, Pesticide and Asbestos impacts in soil. Potential for contaminants to leach to the groundwater.

4 CONCEPTUAL SITE MODEL

4.1 Conceptual Site Model

A Preliminary Conceptual Site Model (CSM) has been developed to integrate the:

I. Contaminants of Concern (historical data review, **Section 3.6**);

II. Potential Source(s) of Contamination (AECs, **Section 3.7**);

III. Potential Pathway(s) of Contamination transport and exposure; and

IV. Potential Receptor(s) of Contamination (past, present and future ecological/human receptors).

The CSM for the Site is summarised below in **Table 4.1.**

Table 4-1 Conceptual Site Model

Potential Source (current and former)	Pathway (preferential and exposure)	Receptors (past, present and future)
AEC 1, 4, and 8. Ash waste associated with operation of brickworks, likely restricted to fill (PAH impacts)	Direct Exposure. Leaching of contaminants to groundwater.	(past, present) Site Workers (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil and/or groundwater ecology (d, in, phy)
AEC 7 Machinery used to crush, refine and produce bricks. (Heavy Metal and Hydrocarbon based impacts).	Direct Exposure. Migration of dissolved contaminants through Surface and/ or Groundwater. Vapour migration and inhalation.	(past, present) Site Workers (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil and/or groundwater ecology (d, in, phy)
AEC 4 Explosive Store(s) (TPH, BTEX and volatile organic compounds)	Direct Exposure. Migration of dissolved contaminants through Surface and/ or Groundwater. Vapour migration and inhalation.	(past, present) Site Workers (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil ecology (d, in, phy)
AEC 1, 6, 10, 12-21, 24, 26, 29-32. ACM in fill materials and Site buildings. (ACM, FA and FA impacts)	Migration of airborne fibres generated by disturbance of ACM, or asbestos impacted soils.	(past, present) Site Workers (inh) (future) Residential Site Occupiers (inh)
AEC 23 and 30 Spills and/or leaks of fuels oils from vehicles and mobile machinery. (TPH, BTEX, PAH, Phenols and Heavy Metal impacts)	Direct Exposure. Migration of dissolved contaminants through Surface and/ or Groundwater. Vapour migration and inhalation.	(past, present) Site Workers (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil and/or groundwater ecology (d, in, phy)
AEC 2, 6, 8 and 12 Workshop spills and/or leaks of fuels, oils and solvents etc. (TPH, BTEX, PAH, Phenols and Heavy Metal impacts)	Direct Exposure. Migration of dissolved contaminants through Surface and/ or Groundwater. Vapour migration and inhalation.	(past, present) Site Workers (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil and/or groundwater ecology (d, in, phy)

AEC 1, 10, 14, 15, 18, 26, 29 and 31 Pesticide use (building footprints, rail corridor and former agricultural land) (Heavy Metal, OCP and OPP impacts)	Direct Exposure. Migration of persistent contaminants via Surface and/ or Groundwater.	(past, present) Site Visitors (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil ecology (d, in, phy)
AEC 1, 10, 14, 15, 18, 26, 31 and 32 Uncontrolled Fill (TPH, BTEX, PAH, Phenols, PCB, HM, Herbicides and Pesticides and Asbestos impacts)	Direct Exposure. Migration of dissolved contaminants through Surface and/ or Groundwater. Vapour migration and inhalation.	(past, present) Site Workers (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil ecology (d, in, phy)
AEC 3, AEC 7, AEC 8, AEC 17 Storage of fuels and oil (TPH, BTEX, PAH and lead impacts)	Direct Exposure. Migration of dissolved contaminants through Surface and/ or Groundwater. Vapour migration and inhalation.	(past, present) Site Workers (d, in) (future) Residential Site Occupiers (d, in) (past, present) Sub-surface soil and/or groundwater ecology (d, in, phy)

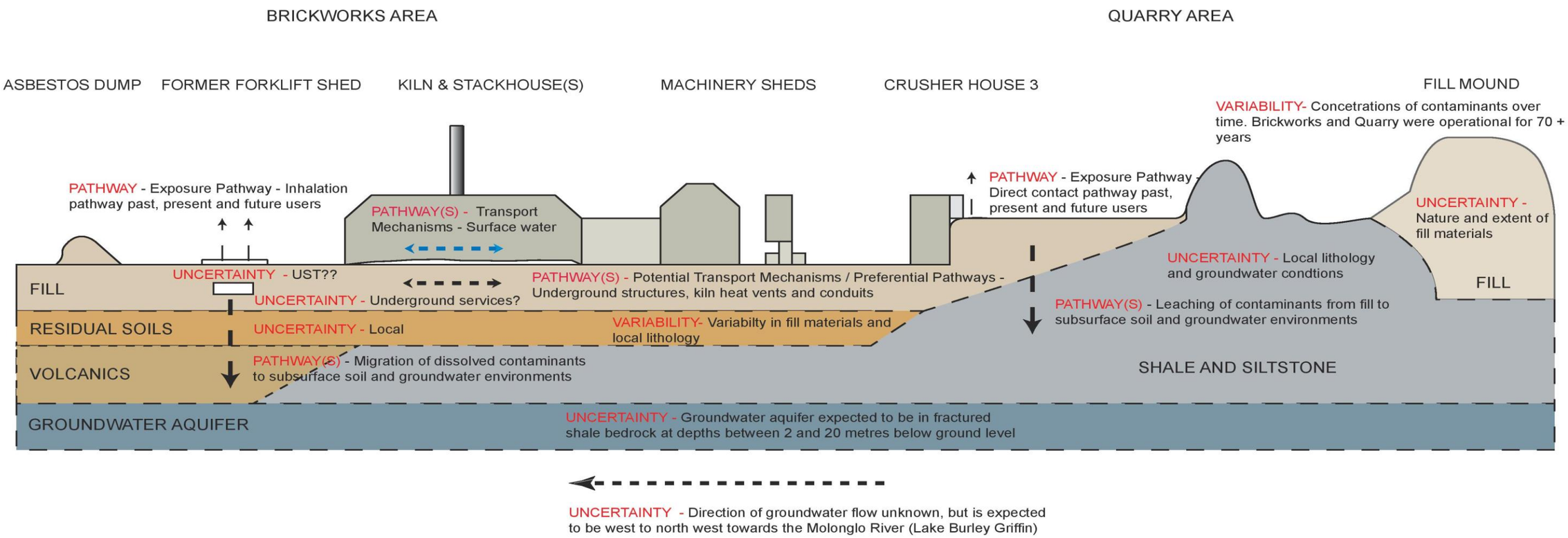
Notes: exposure
d = dermal inh = inhalation in = ingestion ex = explosion phy = roots

4.2 Graphical CSM

A graphical CSM of a typical section through the brickworks and quarry (east to west) illustrating some of the potential transport mechanisms, preferential pathways and data gaps identified in the PSI is provided below. Uncertainties indicated on the CSM indicate areas of uncertainty where additional information may be obtained during a future DSI. Variability indicated in the CSM may require additional data to meet DSI DQOs.

Conceptual Site Model

N.T.S
Not To Scale



4.3 Data Gaps

Subsurface conditions (soil, sediment and groundwater) can be complex and heterogeneous with many unknown geologic interactions that may affect the movement and/or concentrations of potential contaminants. This uncertainty is increased by the lack of sufficient field testing (logging of soil conditions, collection of samples and the evaluation of the concentrations of potential contaminants) to adequately assess the Site. Some of these uncertainties and variability's are identified in the Graphical CSM show above in **Section 4.2**.

Further assessment(s) are recommended to reduce the degree of uncertainty; the data gaps identified should be targeted to yield a greater understanding of the assessment area.

5 SITE ASSESSMENT CRITERIA

5.1 Soil Assessment Criteria

The PSI was conducted with reference to with the current assessment guidelines endorsed by the ACT Environment Protection Authority (EPA) which include the following guidelines:

- ACT EPA, 2009. Contaminated Sites Environment Protection Policy;
- Environment Protection Act, 1997;
- Environment Protection Regulation, 2005;
- NEPC Amended 2013. National Environmental Protection Measure Assessment of Site Contamination (ASC NEPM); and
- NSW EPA, 2000, Guidelines for Consultants Reporting on Contaminated Sites.

The application of these guidelines is summarised below.

5.2 Health Based Investigation Levels (HILs)

Health based soil Investigation Levels (HILs) are provided in the CSM NEPM for metal and inorganic contaminants for a range of exposure settings, based on the current or proposed/approved use(s) of the land, including:

- Residential A (HIL A): Residential with gardens and accessible soil (home-grown produce contributing less than 10% fruit and vegetable intake; no poultry), including children's day care centres, kindergartens, preschools and primary schools.
- Residential B (HIL B): Residential with minimal access to soil; includes dwellings with fully and permanently paved yard space such as including high-rise buildings and apartments.
- Recreational C (HIL C): Public open space such as parks, playgrounds, playing fields, secondary schools and footpaths.
- Commercial/Industrial D (HIL D): Commercial/ industrial, includes premises such as shops, offices, factories and industrial sites.

Conservatively, residential (HIL A) concentrations have been adopted as screening levels for all results from the limited soil sampling conducted as part of this preliminary investigation. Further consideration of the local exposure scenarios (e.g. commercial or open space use) or site specific risk assessment would be appropriate during any detailed investigation and when redevelopment land use plans are available.

5.3 Ecological Investigation Levels (EILs)

The EILs provided in the CSM NEPM relate to the protection of terrestrial ecosystems and are generally applicable to contaminants in the top 2 m of the soil at finished/ground level which corresponds to the root and habitation zone of species. EILs relevant to gardens and low density residential land use have been adopted for the whole site.

Calculation of some EILs also requires measurement of soil pH and cation exchange capacity (CAC), where this is the case we have assumed typical values for the soil types observed. If soil

concentrations exceed these, indicative, EILs further consideration of local soil / fill conditions and specific biota to be supported by the soil/ fill (e.g. tree plantings) may be warranted when detailed redevelopment plans are available.

5.4 Health Screening Levels (HSLs)

Health Screening Levels (HSLs) are provided in the amended NEPM for petroleum hydrocarbon compounds using the same land use settings as those prescribed by the HILs for Metal and in Organic Contaminants, however the values for Residential A and B are combined in the HSL tables as they are based on the same exposure conditions for vapour inhalation pathways. The HSLs include additional consideration of soil texture and depth to source to determine appropriate soil, groundwater and soil vapour criteria for the exposure scenario. The Site's soils are predominately clay based. However given the porous nature of fill materials (brick waste and unconsolidated fill) present at the brickworks and quarry, a sand soil profile has been adopted conservatively.

5.5 Asbestos Containing Materials (ACM)

Materials containing asbestos on the surface or within the fill are considered to be potentially contaminated and therefore require assessment and remediation in accordance with the ACT EPA endorsed Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (WA Department of Health, 2009).

The purpose of the PSI was to identify the presence/absence of asbestos in Site soils, as such the adopted field sampling and laboratory analytical methodology did not meet the requirements of the ACT EPA endorsed WA guidelines.

5.6 Aesthetic Considerations

Auditor guidelines require the consideration of soil aesthetics. For the purposes of this preliminary investigation any soils with discoloured or that are affected by odours or containing foreign materials have been noted for consideration at the appropriate stage of the contamination assessment / audit process.

5.7 Adopted Assessment Criteria

The soil analytical results were compared (conservatively) to low density residential land use criteria as summarised below in **Table 5.7**:

Table 5.7 – Adopted Assessment Criteria

Adopted Criteria	CoC
NEPM (amended 2013) HIL A	Metals, PAH, Phenols, OCP, OPP, PCB
NEPM (amended 2013) HSL A & B, 0 to <1m, Sand	BTEX, TPH
NEPM (amended 2013) EIL	DDT, Naphthalene, Metals (as, pb, cu, ni, zn)
Presence/Absence	Asbestos

The soil analytical results are compared to the adopted assessment criteria in Table 1, **Appendix I**.

6 SAMPLING PLAN AND METHODOLOGY

6.1 Soil Sampling Rationale

A limited program of geotechnical and environmental test pitting was conducted at the Site to provide preliminary geotechnical data for future development within the Site (TP01 to TP13); environmental samples were collected at these locations to assess general site soil conditions.

The remainder of the sampling locations were targeted to either confirm previous soil data or to fill data gaps to better inform the recommendations outlined in this PSI. The sampling location plan is presented in Figure 4**, Appendix A**.

It is also noted the sampling locations were placed to minimise impacts on the critically endangered Golden Sun Moth (GSM) population in the Southern Area of the Site. The GSM populations are shown in Figure 2a, **Appendix A**.

A summary of the sampling plan is provided below in **Table 6.1**.

Table 6-1 Sampling Plan

Test Pit Location	Targeted AEC	Comment
TP01 to TP13, excluding TP12	General Site / AEC 1 Waste Fill	General Site coverage – to describe general site subsurface conditions including identification of filled areas
TP12 and TP14	AEC 29 Rail Corridor	Targeted – to assess impacts associated with treated timber sleepers (pesticides), asbestos from brake pads and vegetation control (in corridor)
TP15 to TP17	Targeted: AEC 21 Brickworks Workers Accommodation (former) – General Areas	General coverage Brickworks Workers Accommodation (former) – to describe subsurface conditions including the nature and extent of filled areas
TP18	Targeted: Grove of Deciduous Trees / Open Space Areas	Targeted – to assess the potential former use of pesticides
TP19	Targeted: AEC 5 Explosives Store	Targeted – to assess impacts from storage of explosive compounds
TP20	Targeted: AEC 2 General Areas - Recycled Timber Holding Yard	Targeted – to assess potential metal impacts leaching from treated timbers
TP21	Targeted: AEC 3 UST near Forklift Shed (former)	Targeted– to describe subsurface conditions including indications of hydrocarbon impacts (odours and/or staining)
TP22	Targeted: Robson Laboratories BH14 / AEC 7 Operation of Crusher and Refinery Plant(s)	Targeted – to describe subsurface conditions including indications of hydrocarbon impacts identified by Robson (2006)
TP23, TP24, TP26, TP27 and TP28	Targeted: AEC 1 Waste Fill and AEC 19 Clay Storage Shed (former)	General coverage Quarry area – to describe subsurface conditions including the nature and extent of fill
TP25	Targeted: AEC 18 Fill Mound(s)	Targeted – to describe nature of mounded materials

6.2 Assessment Methodology

6.2.1 Service Clearance

Test pit locations were cleared for the presence of underground services by a Telstra accredited plant location contractor referencing utility plans obtained through a Dial Before (DBYD) You Dig search.

6.2.2 Test Pitting

Test pitting activities were undertaken between the 9 and 11 September 2013 using an 8 tonne excavator. Test pits were advanced to either refusal (on bedrock) or until the maximum investigation depth of 3 mbgl.

Sub surface conditions were logged in accordance with the Unified Soil Classification System (USCS); test pit logs are included in **Appendix J**.

6.2.3 Soil Sample Collection

Soil samples were collected directly from the bulk undisturbed soil from the centre of the excavator bucket. A new disposable nitrile gloves was used for each sample depth and location. The soil sample was directly placed into laboratory supplied sample jars by a nitrile gloved hand. Samples were collected at nominal depths of 0.0, 0.5, 1.0, 2.0 and 3.0 mbgl and intervals of 100 mm.

Actual sample depths form each test pit was modified to target each type of material present areas of suspected contamination (staining, odour and/or fill).

6.2.4 Sample Storage and Handling

Soil Samples
Soil sample were placed into 250 ml glass jars with Teflon lined lids supplied by SGS Laboratories. The jars were completely filled with soil (so there was minimal to zero headspace), labelled with the job number, date, time, sampler and unique sampling point identification.

The soil jars, once filled with sample, were immediately placed in an ice-filled esky to keep the samples below a temperature of approximately 4^{o}C. A chain of custody (CoC) form was filled in with the sample names, sampling date and required analyses. This documentation and the samples were then sent to the laboratory for analysis, within the prescribed analyte holding times

6.2.5 Decontamination

No reusable sampling equipment was utilised in the investigation. Decontamination and the collection of rinsate blanks were not required.

6.2.6 Quality Control samples

Field QC samples included field replicate samples (duplicates and triplicates), field blanks, trip blanks and trip spikes. A detailed account of the QA/QC program adopted for the PSI can be found in **Appendix K**.

6.2.7 GPS

The GPS coordinates of each test pit were recorded on SMEC field sheets and provided below in Table 6.2.

Table 6-2 GPS Coordinates UTM 55

Test Pit	X Coordinate	Y Coordinate
1	689767	6090210
2	689948	6090023
3	690043	6090013
4	690271	6089946
5	690313	6089784
6	690410	6089820
7	690472	6089844
8	690564	6089879
9	690469	6090000
10	690579	6090051
11	690247	6090052
12	690044	6090134
13	689959	6090229
14	689871	6090319
15	689890	6090442
16	689910	6090388
17	690017	6090363
18	690215	6090246
19	689822	6090537
20	689930	6090474
21	689908	6090610
22	690015	6090615
23	690053	6090548
24	690113	6090541
25	690142	6090461
26	690109	6090581
27	690137	6090729
28	690208	6090566

7 QUALITY ASSURANCE/QUALITY CONTROL

7.1 Field and Laboratory QA/QC

A summary of the Field and Laboratory QA/QC is provided in **Appendix K**.

7.2 Summary QA/QC Assessment

Assessment of the field and laboratory QA/QC indicate that the accuracy and precision of the analysis was satisfactory and constitute an appropriate reflection of soil conditions and are suitably reliable for the objectives of the PSI.

8 RESULTS

8.1 Subsurface Conditions

The subsurface conditions encountered during the PSI are summarised in the following sections, test pit logs can be found in **Appendix J**.

8.1.1 Fill Materials

Fill was encountered at 18 test pit locations across the Site and was typically logged to comprise Fill reworked natural sandy to silty clays. Ash waste likely sourced from the operation of the brickworks (combustion of wood and coal) was identified in fill at both the brickworks and quarry. The presence of ash if fill is further discussed in **Section 9.1** and **9.4**.

With the exception of test pits TP23 to TP28 in the quarry area and TP02 fill generally terminated at depths less than a 1 mbgl. Deeper fill comprising brick waste, ash, quarry cuttings (shale) with traces of anthropogenic inclusions (glass, metal and bitumen) was identified in TP 25 and TP28 within the quarry area to the maximum investigation (and the limit of the excavator) depth of 3 mbgl.

At test pit location TP02 fill logged to comprise silty cobbles to gravelly sand with traces of brick and bitumen. The test pit terminated at 2 mbgl due to refusal on a large piece of concrete, a piece of pipe was also identified at this depth. The source of the fill is unknown but is likely attributed to filling to meet the design grade of the Cotter road.

8.1.2 Natural Soils

Natural soils were generally comprised soft brown silty topsoils underlain by medium to stiff red-brown silty clays and clays. Variable components of sand, cobbles and weathered rock (shale and siltstone) were also logged.

Natural soils ranged from silts to clays with variable components of sand and weathered rock (shale, ironstone and was typically encountered between depths of 0.0 and 1.0 mbgl.

8.1.3 Residual Soils and Bedrock

Natural soils graded to weathered red brown residual soils (silty clays and clay) and were underlain by shale, dacite, siltstone or sandstone bedrock. Strength and weathering of the bedrock material varied across the Site. With the exception of TP03, TP23 and TP28 (terminated in fill) bedrock was typically logged between depths of 0.17 and 1.9 mbgl.

8.2 Soil Analytical Results

Soil analytical results are compared to the adopted assessment criteria and can be found in **Appendix I**.

With the exception of TRH, Metals and PAH concentrations all samples submitted for laboratory analysis returned concentrations of analytes below the laboratory LOR and therefore the adopted assessment criteria. Copies of the laboratory certificates are provided in **Appendix L**.

A summary of the results is provided below:

TRH

Concentrations of TRH C_{10}-C_{40} (120 mg/kg) above the laboratory LOR of 110 mg/kg were reported in sample TP26-2.0. The sample location comprised of fill material containing brick waste, metal and bitumen.

PAH

Phenanthrene (0.1 mg/kg) was detected at sample TP22-0.5 marginally above the laboratory LOR of <0.1 mg/kg. The sample location comprised of fill material containing brick waste, ash and bitumen.

Metals

Concentrations of metals were below the adopted assessment criteria in all soil samples submitted for analysis.

Asbestos

The presence of asbestos was not identified in any of the fill samples submitted for analysis.

PCB

Concentrations of PCBs were below the adopted assessment criteria in all soil samples submitted for analysis.

BTEX

Concentrations of BTEX were below the adopted assessment criteria in all soil samples submitted for analysis.

OCP/OPP

Concentrations of OCP/OPP were below the adopted assessment criteria in all soil samples submitted for analysis.

Phenols

Concentrations of Phenols were below the adopted assessment criteria in all soil samples submitted for analysis.

Explosives

Explosive compounds were not detected in sample TP19-0.0 targeting AEC 5.

9 DISCUSSION & RECOMMENDATIONS

The Site history data indicates the potential for contamination to be present; a discussion of the history review, field and laboratory data is provided below.

9.1 AEC 1 – Waste Fill

Fill Materials

Likely contained to the brickworks and quarry areas of the Site, as shown in Figure 2a, 4 and 5, **Appendix A**.

The nature and extent of fill material at the brickworks and quarry is unknown, observational data indicate the material comprised reworked natural materials (silts, clays and shale) with variable amounts of brick (or tile) waste, ash and anthropogenic inclusions (including metal, concrete and wood). Although not observed in fill, occasional surface fragments of potential ACM were noted at both the brickworks and quarry.

The presence of ash in waste fill is discussed is discussed in **Section 9.4**.

Fill extended beyond the maximum investigation depth of 3.0 mbgl at test pits TP25, 26 and 28 (quarry area). The available historical data did not indicate the depth of the quarry nor the nature of filling activities. TP24 located approximately 10 m south east of TP26 was terminated on shale bedrock at 0.5m bgl, indicating the presence and depth of fill is variable across the quarry.

At test pit location TP02, fill was logged to comprise silty cobbles to gravelly sand with traces of brick and bitumen. The test pit terminated at 2 mbgl due to refusal on a concrete slab, a pipe was also identified at this depth. The source of the fill is unknown but is likely attributed to filling to meet the design grade of the Cotter road.

The limited available soil analytical data suggests that the encountered fill materials contain low concentrations of metals, TRH and PAHs.

Given the uncertainty around the nature and extent of fill at the Site further investigation is recommended.

9.2 AEC 2 –Recycled Timber Storage

Storage of recycled timbers

Various areas of the brickworks are currently used for the storage of recycled timber materials. The exact volume and extent of materials stored is unknown but is restricted to the brickworks area of the Site, as shown in Figure 2a, 4 and 5, **Appendix A**.

In an interview, the business owner Mr Thor Diesenfdorf stated that it was unlikely that any of the stored wood (past or present) was treated given the regulations around the reuse of these materials (arsenic and/or OCP treated timbers). However it was possible that some creosote treated and/or painted (potentially lead based) timber have been reused during the twenty years the business has been operational.

TP20 targeted an accessible area used for the storage of wood (potentially treated) materials by Thor's Hammer. Gravel and clay fill was logged to a depth of 0.27 mbgl and was underlain by moderately weathered siltstone.

Elevated concentrations of metals were not detected in the surface soil sample submitted for analysis.

The potential for contamination is considered low. No further investigation is recommended.

9.3 AEC 3 – Fuel Storage

TP21 targeted the potential location of a 1000L petrol UST identified by the historical data between the former forklift shed and Fan House 2. Fill materials were logged to comprise silty cobbles with brick and tile waste, ash, coal and bitumen. No UST or associated infrastructure were identified, nor were any staining or hydrocarbon odours observed. Given the (relative) small size of the UST it possibly remains in-situ.

Robson (October 2010) reported the presence of UST (filling point and breather vents) near Kiln 1 and a small empty above ground storage tank near Machinery Shed 3. These features were not identified during the PSI.

Further investigation is recommended to determine the presence and condition of any fuels storage tanks at the Site.

9.4 AEC 4 – Stackhouse(s)

Four stackhouses were observed to be present at the brickworks, they have been used to burn coal, wood and later oil. Variable amounts of ash waste was observed to be present inside the firing chamber in each stackhouse. Stored coal was observed adjacent to Fan House 2, and was presumably used to fire Stackhouse 3.

Ash Waste in Fill

Ash waste was identified in the PSI either as a discernible layer or mixed in Waste Fill (AEC 1) within both the brickworks and quarry (TP12, TP21, TP22, TP25 and TP26).

The low detected concentration of PAHs indicate the ash material is benign, this may be related to the stackhouses operating at high temperatures resulting in the complete combustion of carbon based (coal and wood) fuels, however the ash layer was often variable (both partially and heavily combusted)

Given the uncertainty around the nature and extent of ash waste at the Site further assessment is recommended. The assessment should include the stackhouse(s) and coal storage facility(ies) which were not targeted as part of the PSI.

9.5 AEC 5 –Explosives Store 1

A building footprint comprising concrete tiles (around 30 cm x 30 cm) was targeted (TP19) as the potential base of the explosives store. No odours or staining were observed beneath the building footprint, underlying soils graded to natural clays at a depth of 0.3 mbgl. Several surface fragments of ACM were observed in the general area.

Sample TP19-0.0 was submitted to evaluate concentrations of explosives. Laboratory analysis did not did not detect any explosive compounds in the submitted sample.

Remnant features of the building were not easily identifiable during the PSIand the disposition of the explosive store and level of control of explosives (potential for spill) is not known. Explosive residues may occur away from the sampled location further investigation is recommended.

9.6 AEC 6 – Machinery Sheds

A brief inspection of the machinery sheds was completed as part of the PSI. The sheds were observed to be used for the storage of wood materials (Thor's Hammer) and remnant machinery from former operations. No staining was observed on the floors which were sealed (concrete), however some sheen was observed in surface water drains around Machine Shed 1.

General areas around the machinery sheds were littered with empty drums, scrap metal and other waste materials. No obvious signs of staining and/or odours were noted during the inspection.

Further investigation of the machinery sheds including surrounding areas is recommended.

9.7 AEC 7 – Operation of Crusher and Refinery Plant(s)

Robson (2006) completed a limited intrusive investigation at the brickworks. The soil data identified TPH at 10 550 mg/kg (C_6 to C_{36}) in a soils sample collected from (Robson) borehole location BH14 (to the rear of Machine Shed 3 at a depth of 0.5-0.7 mbgl. An oil pressure/storage was identified near the north eastern corner of Machine Shed 3 suggesting oils may have also been used and/or stored in the area.

Several test pits including TP22 were advanced in this area to investigate the potential for hydrocarbon contamination of soil. Fill materials were encountered which generally comprised sandy clays with angular shale gravels, ash, bitumen and bricks. Field observations and soil analytical data did not indicate the presence of hydrocarbon impacted soils

It is possible that the TPH impact (identified in one sample by Robson) was related to an isolated spill of oil (long chain hydrocarbon fractions) associated with plant machinery (removed) previously used during the crushing, conveying and refining of raw materials from the quarry to Machine Shed 3. A diagrammatic representation of the brick making process is presented in **Appendix E** (1960).

9.8 AEC 8 – Coal/Oil Storage Facility(ies)

Historical information and aerial imagery presented in the Lovell and Chen CMP (page 168) identified the presence of two large above ground storage tanks at the Model Railway Shed. At the time of the PSI it was observed to be an unsealed and empty shed. No odours or staining were observed.

Robson (2006) identified an additional coal storage facility north of Machine Shed 3. SMEC observed to be a remnant steel structure, the surrounding area was observed to be sealed (concrete) with no obvious signs of staining and/or odours. It is likely that there are smaller stores of coal within the brickworks as observed near Fan House 2.

The potential for contamination arising from the storage of coal/oil is considered low to moderate, however further investigation is recommended in areas identified as used for the storage of oils.

9.9 AEC 9 – Kiln Sand

Kilns sands are likely to be present in Kilns 1 to 6 as shown in Figure 2a (**Appendix A)**. There is potential of kilns sands to present in demolition waste associated with AEC 12 (former Kilns).

Robson (2006) reported elevated concentrations of lead (770 mg/kg) in a sample collected from kiln sand. Robson stated '*The source of the lead may be from the glaze and not be specifically from the kiln sands (sand on the floor of the kilns)'*.

The investigation of kiln sands did not form part of SMEC's scope for this investigation.

Further investigation to assess the source and presence of metal impacts in kilns sand is recommended.

9.10 AEC 10 – Asbestos Dump

Robson (2006-2012) identified the presence of asbestos in the building structures of the brickworks. A asbestos dump in the western portion of the brickworks was also identified by Robsons (2006).

A review of previous reports suggests that Robson's completed some remedial work and have prepared a Remediation Action Plan (RAP) for the dump estimated to be 500 m^3. SMEC have not sighted the RAP or any assessment reports relating to the dump.

- The LDA have advised SMEC that Robson Environmental is managing the remediation of the asbestos dump. The remediation area is shown in **Figure 2a, Appendix A**. This area was bound by a security exclusion fence and was not investigated during this PSI.

Asbestos in Waste Fill (AEC 1)

Asbestos was not identified in fill material encountered in this PSI, however surface fragments of ACM sheeting were observed at several locations across the brickworks, former workers accommodation, and quarry.

Given the volume of waste fill across the brickworks, former workers accommodation and quarry; SMEC recommends further investigation to determine the presence (or absence) of asbestos in fill materials.

9.11 AEC 11 – Septic Tank

Historical data indicates the septic tank is located in the western portion of the brickworks area. Inspection of the septic tank was not completed as part of the PSI due to a security fence excluding access to this area (and the asbestos dump, AEC 10).

Further investigation to assess potential impacts in soil and/or groundwater is recommended.

9.12 AEC 12 – Carpenters Workshop

Historical data identified the presence a carpenter's workshop south east of the brickworks. No identifiable remnants of the former building were observed during the PSI.

The contamination status of the building footprint and surrounding area is unknown, further investigation is recommended.

9.13 AEC 13 –Former Kilns

Historical data identified the presence of additional former kilns south east of the brickworks. No signs of theses kilns were identified during the PSI.

The contamination status of the building footprint and surrounding area is unknown, further investigation is recommended.

9.14 AEC 14 - Fill Mounds

Two fill mounds were identified immediately south of the quarry fence. A detailed inspection of the mounds was limited by the presence of grass. The mounds may contain demolition waste from nearby former structures AEC 11 and AEC 12 (carpenters workshop and former kilns respectively).

Further investigation to evaluate potential contamination associated with the fill mounds is recommended.

9.15 AEC 15 – Weighbridge (former)

Former weighbridge used to weigh imported raw materials, Lester Firth & Associates (1986) report the concrete pit as remaining and has since been filled with material of unknown origin (likely consistent with AEC 1 – Waste Fill) .

This feature was not identified in the PSI, and indicative location is provided in Figure 2a, **Appendix A**.

Potential for impacts associated with AEC 1, further investigation is recommended.

9.16 AEC 16 – Power House

The Power House building was used since 1915 to breakdown high voltage power supplied from the Kingston Power House. The electricity was then distributed across the Site.

A review of the 1916 historical plan (**Appendix E)** indicates that at least some of the electricity was distributed across the Site in underground electrical conduits. It is probable that these conduits were constructed of ACM.

The Power House buildings were not inspected as part of the PSI. There is potential for PCBs and/or ACM to be present in the building and in the surrounding soils.

Further investigation assessment is recommended.

9.17 AEC 17 – Boiler House and adjoining Substation

The Boiler House and adjoining Substation were constructed to service the brick extrusion plant and were briefly operated for approximated 5 years (1971 to 1976). All internal infrastructures have since been removed from the buildings. It is unknown if the boiler was fuel (wood, coal or oil) or electricity driven.

The potential for contamination at this location is considered low given the brief operation period (5 years) and the removal of potential sources of contamination (transformers used in the substation, operation of the boiler etc). However given the age of the building(s) they are likely constructed of ACM.

The potential for t contamination at this AEC is considered low, although further investigation may be considered to verify this.

9.18 AEC 18 – Fill Mound(s)

Two large fill mounds were also identified in the quarry area; the purpose of the mounds is unclear but may have been related to directing rain water away from the quarry pit. Observational data indicate the material comprised reworked natural materials (silts, clays and shale) with variable amounts of

brick waste, ash and anthropogenic inclusions (including metal). Fragments of ACM were observed in the northern fill mound.

The limited available soil analytical data suggests that fill used to create the mounds contain low concentrations of metals, TRH and PAHs. Given the uncertainty around the nature and extent of fill at contained in the mounds further investigation is recommended.

9.19 AEC 19 – Clay Storage Shed (former)

Test pit TP23 was advance into a small mound of fill proximal to the footprint of the Clay Storage Shed. Fill was logged to 1.6 mbgl and comprised sandy silts to sandy clays with coarse angular gravels (fresh siltstone), bricks and bitumen. The fill material was underlain by slightly weathered siltstone bedrock.

The available soil analytical data from TP23 indicate the fill waste contained concentrations of TRH, PAH and metals less than the adopted assessment criteria.

The potential for contamination at this location sourced from the Clay Storage Shed is considered low, no further investigation is recommended.

9.20 AEC 20 – Former Weatherboard Cottage

A weatherboard cottage with attached stable and coal storage (demolished 1920s) was identified by Lester Firth and Associates (1986). Remnant features of the building and/or attached structures were not observed during the PSI.

The potential for contamination is considered low, no further investigation recommended.

9.21 AEC 21 – Former Workers Accommodation

The workers accommodation was observed to contain several demolished brick buildings and footings. The demolition waste generally comprised bricks, metal and concrete, occasional fragments of ACM were also observed.

Test Pit TP15 and TP16 were advanced in the general areas of the workers accommodation. Fill materials were only logged at TP15 to a depth of 1.0 mbgl and were comprised of reworked natural soil (silts) with traces of brick, glass and charcoal.

It is probable that the area contains pockets of fill containing demolition waste from the former workers accommodation building(s). The limited soil analytical data from TP15 and TP16 did not identify concentrations of contaminants greater than the adopted assessment criteria. Further assessment to determine the nature and extent of fill in the workers accommodation area is recommended.

9.22 AEC 22 – Interceptor Pit

A triple interceptor type structure identified adjacent north to a demolished building thought to have been the kitchen/mess hall (Figure 2b, **Appendix A**). The interceptor likely received grease and fats from the kitchen/ mess hall operations, no odours and/or staining was observed.

The pit may have also received petroleum based oils and domestic chemicals.

The potential for contamination is considered low, further investigation may be considered to verify this.

9.23 AEC 23 – Abandoned Vehicle

An abandoned vehicle overgrown with woody weeds (Blackberries) was identified during the PSI. A detailed inspection was limited by the presence of vegetation, however given the age of the vehicle it has likely been abandoned for over 20 years. No staining and/or odours were observed at the time of the PSI.

The potential for contamination sourced from the abandoned vehicle is considered low, further investigation may be considered to verify this.

9.24 AEC 24 – Dumping Area

Area of dumped materials including wood, rusted metal containers, a tar drum, electric fuse box and general waste (plastic, wood and metal pieces). No staining and/or odours were observed at the time of the PSI.

The potential for contamination is considered to be low to moderate, further investigation is recommended.

9.25 AEC 25 – Scrap Metal Stockpile

Stockpile approximately 10m x 8m, volume difficult to determine inspection limited by woody weeds. Observed to contain reworked soils, sheet metal, bricks and an old fridge. It is probable that the scrap metal originated from the former workers accommodation.

Given the uncertainty around the nature and extent of fill at this location further investigation is recommended.

9.26 AEC 26 – Fill Mound

A large stockpile 50m^3 observed adjacent to brickworks boundary fence. Observed to comprise reworked soils, rusted metal (sheets and pipes), concrete and bricks. The source of the fill mound is unknown but may have been created during the demolition of the former workers accommodation.

Given the uncertainty around the nature and extent of fill at this location further investigation is recommended.

9.27 AEC 27 – Cleared Area

A large cleared area with patches of asphalt was observed adjacent to the brickworks workers accommodation, no mounding or dumped materials were identified. The purpose of the area is unclear but is identifiable on historical plans since the 1920s; more recent uses may include the storage of materials.

Fill was logged to a depth of 0.5 mbgl and comprised sandy clay with gravels, glass and bitumen. Soil analytical results at this location were less than the adopted assessment criteria.

Historical aerial photographs indicate activities in this have been undertaken since the 1950's. Given the long and undocumented historical use of the area further investigation is recommended.

9.28 AEC 28 – Explosives Store 2

Lester Firth & Associates (1986) reported that the original explosives store was located 180 m south of the current Power House, and was later relocated 160 m west of the Power House (AEC 5).

Remnant features of the building were not identifiable during the PSI. Potential for explosive CoPC to be present in soils, further investigation is recommended.

9.29 AEC 29 – Rail Corridor

A rail corridor was observed in the western portion of the Site and was noted to be free of remnant infrastructure (ballast, track or sleepers).

Test Pit TP12 and TP14 were advanced within the corridor; fill was logged to maximum depth of 0.8 mbgl and comprised reworked natural soils (silts and clays). Fill layers were generally underlain by either residual soils (silty clay) and bedrock (siltstone). Analytical results at these sample locations were less than the adopted assessment criteria.

The available historical data indicate the rail line was only briefly used in the 1920s before being dismantled and wooden sleepers used to fire the stackhouses.

The potential for contamination in the rail corridor is considered low, although further investigation may be considered to verify this.

9.30 AEC 30 – Vehicle Tracks (site wide)

The Site contains multiple tracks (both current and former) with a long history of vehicular usage. The current (roads, streets, avenues) and former (denoted by a dashed blue line) vehicle tracks are shown in Figure 5, **Appendix A**.

There is potential for impacts arising from spills and leaks which are likely to accumulate in areas that receive wash (drains, low points and other drainage features).

The potential for contamination is considered low to moderate, further investigation is recommended.

9.31 AEC 31 – Waste Pile

A small waste pile (around 10 m^3) comprising bricks, metal, general waste (plastics and cardboard) and several fragments of potential ACM was identified near Adelaide Avenue. The material appeared to have been dumped.

It is recommended that the asbestos dump be assessed and disposed offsite in accordance with ACT EPA requirements.

9.32 AEC 32 – Fill (Road)

Fill comprising silty cobbles to gravelly sand with traces of brick and bitumen was logged at sample location TP02. The test pit terminated at 2 mbgl due to refusal on a large piece of concrete, a piece pipe was also identified at this depth. Soil analytical results at this location were less than the adopted assessment criteria.

Given the uncertainty around the nature and extent of fill at this location further investigation is recommended.

10 CONCLUSIONS

SMEC completed a Preliminary Site Investigation (PSI) at the Site to provide preliminary contamination data for potential purchasers (and developers) of the Site. Key findings include:

The available historical data indicate the northern portion of the Site has been used as brickworks since the early 1900's. Remnant buildings include, 6 kilns, 4 stackhouses, office building and amenities, 3 machinery sheds, workshops, boiler house, a substation, a power house (prior to 1915 was powered by a steam donkey engine), storage sheds and other minor buildings. A disused quarry is located adjacent (east) to the brickworks is also present at the Site.

Demolished features include temporary kilns (south east), two explosive stores (180 m south and 130 m west respectively), a forklift shed (west), clay storage shed (quarry) and a weatherboard house (quarry). Significant amounts of filling across the brickworks and quarry is evident and is poorly documented.

Parts of the brickworks are currently leased by Thor's Hammer a wood recycling business, the potential for contamination due to current land uses is considered low. The reminder of the Site was formerly grazing land which has been developed to include road infrastructure (Cotter Road, Adelaide Avenue and Yarra Glen).

A total of 28 test pits were advanced across the Site and 42 samples submitted for laboratory analysis to evaluate contaminants of concern. The purpose of the sampling plan was to provide preliminary geotechnical and environmental data for the Site.

Fill material was logged at 18 of the 28 test pit locations. Dependent on the sample location the fill materials were observed to comprise:

- **Brickworks and Quarry**: brick waste, ash, quarry cuttings (shale) with traces of anthropogenic inclusions (glass, metal and bitumen) to a maximum depth of 3 mbgl, the nature and extent of fill is unknown;
- **Surrounding Areas**: sandy to silty clay, probable reworked natural soils, generally encountered at shallow depths less than 1 mbgl; and
- **Adjacent Cotter Rd**: silty cobbles to gravelly sand with traces of brick and bitumen, refusal on concrete 2 mbgl, the nature and extent of fill is unknown.

Whilst the preliminary data did not identify contamination in the above fill materials, the nature and extent of fill materials is unknown. Remediation may also be considered for aesthetic reasons.

Natural soils were logged to comprise soft brown silty topsoils underlain by medium to stiff red-brown silty clays and clays. Natural soils graded to weathered red brown residual soils (silty clays and clay) and were underlain by shale, dacite, siltstone or sandstone bedrock. Strength and weathering of the bedrock material varied across the Site and was logged between depths of 0.17 and 1.9 mbgl.

All analyte concentrations in natural and fill samples submitted for analysis were less than the adopted (human health based and ecological) assessment criteria. In particular, it was noted that polycyclic aromatic hydrocarbon (PAH) concentrations in fill containing coal ash (which are often associated with PAH contamination) were below assessment criteria and typically below laboratory detection limits.

It should be noted, however, that the sampling densities adopted during this preliminary assessment were below though that would typically be adopted during a detailed site investigation (DSI) and the full depth of fill in the quarry has not been investigated.

Based on the our review of previous reports and exiting data SMEC relating to the Site a total of 32 areas of environmental concern (AEC) were identified at the site. Potential risks to human health and the environment associated with each AEC were considered, supported by data from the limited supplemental soil sampling and analysis conducted by SMEC as part of this preliminary investigation. On this basis preliminary information reviewed to date 28 of the 32 identified AECs were qualitatively assessed be of low risk with no further investigation or limited further investigation recommended.

Generally, based on the limited soil data collected during this PSI, the site ecological and human health risks associated with brickworks, quarry and the former workers accommodation areas of the site are considered moderate to low The remainder of the Site (the Southern Areas) typically comprised of natural soils grading to weathered bedrock. Soil analytical results returned concentrations of contaminants less than the adopted assessment criteria, the potential for contamination is therefore considered low.

Although no potential source of groundwater contamination was identified during this investigation, no groundwater testing or assessment groundwater conditions at the site has been made.

The results of this primary investigation are not sufficient to assess the suitability of the site for a specific planned land use. It is recommended that, once detailed plans indicating the proposed land use(s) across the Site have been developed that a detailed site investigation (DSI) be undertaken to assess the suitability of the site for the planned land use(s). Typically a Site Audit Report (SAR) and Site Audit Statement (SAS) regarding the suitability of the Site would be required by the approving authority and an ACT EPA accredited Site Contamination Auditor would be engaged to independently review the DSI and any subsequent remedial works as supported by the ACT EPA.

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APPENDIX A: FIGURES

FIG NO. 1	**FIGURE TITLE** Site Location	**DATE** 17/02/2014	0 155 310 620 Meters 1:25,000	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © Bing Maps, Imagery © Roadnet		

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Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 1.mxd

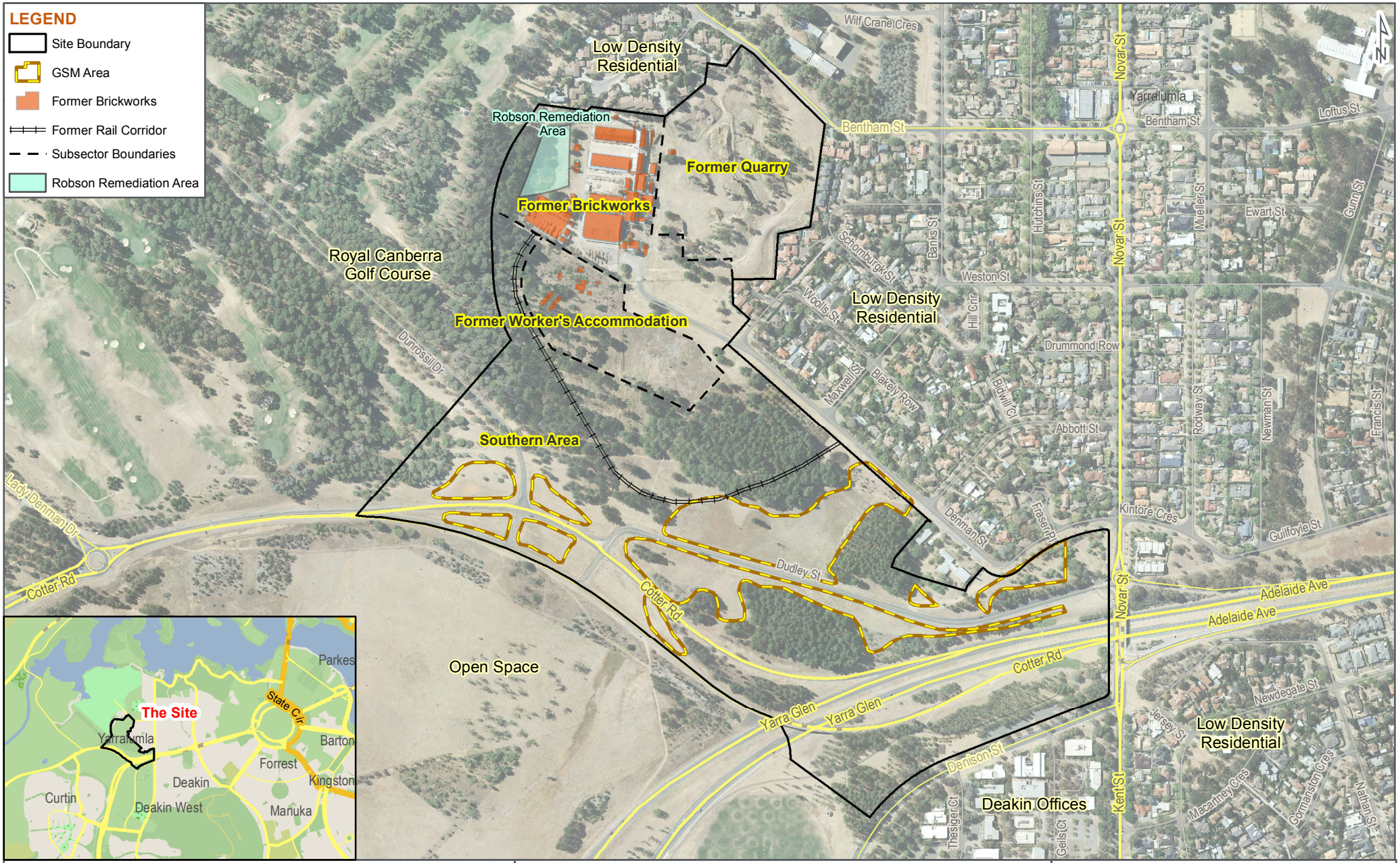

FIG NO. 2a	**FIGURE TITLE** Site Layout	**DATE** 17/02/2014	0 40 80 160 Meters 1:7,000	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © Bing Maps, Imagery © Roadnet		

Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 2a - Layout.mxd

ID	Description
2	Concrete Retaining Wall
3	Pow er House
4	Staffordshire Kiln (Kiln 1)
5	Fan House for Kiln 1 (Fanhouse 1)
6	Chimney Stack for Kiln 1 (Stackhouse 2)
7	Offices
8	Hardy patent Kiln (Kiln 2)
9	Fan House for Kiln 2 (Fanhouse 2)
10	Chimney Stack for Kiln 2 (Stackhouse 3)
11	Amenities Block
12	Hardy Patent Kiln (Kiln 3)
13	Chimney Stack for Kiln 3 (Stackhouse 4)
14	Machine Bay I for Kiln 1
16	Machine Bay III for Kiln 3
15	Machine Bay II for Kiln 2
17	Workshop
18	Small Crusher House (Crusher House 1)
19	Larger Crusher House (White Pan Room / Crusher House II)
20	Primary Crusher House (Crusher House III)
21	Elevator / Converyor
22	Dow ndraft Kilns (Kiln 4 - 6)
23	Dow ndraft Kiln Control Room
24	Chimney Stack for Kilns 4 - 6 (Stackhouse 1)
25	Toilet Block
26	Amenities Block
27	Substation / Control Room
28	Boiler House
29	Ancillary Storage Building
30	Remnant of Extrusion Plant (Concrete Pad)
31	Ancillary Storage Building
32	Storage Shed
33	Model Railw ay Workshop
34	Model Railw ay Storage Shed
35	Forklight Shed (Former)
36	Weighbridge (Former)
37	Sleeping Quarters 2
38	Sleeping Quarters 2
39	Hut
40	Hut
41	Hut
42	Hut
43	Latrine
44	Kitchen and Mess Hall

FIG NO. 2b

FIGURE TITLE Former Canberra Brickworks Features

DATE 17/02/2014

0 15 30 60
1:1,750 Meters

PAGE SIZE A4

COORDINATE SYSTEM ACT Grid 1966

PROJECT NO. 3002369

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Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 2b - Brickworks Features.mxd

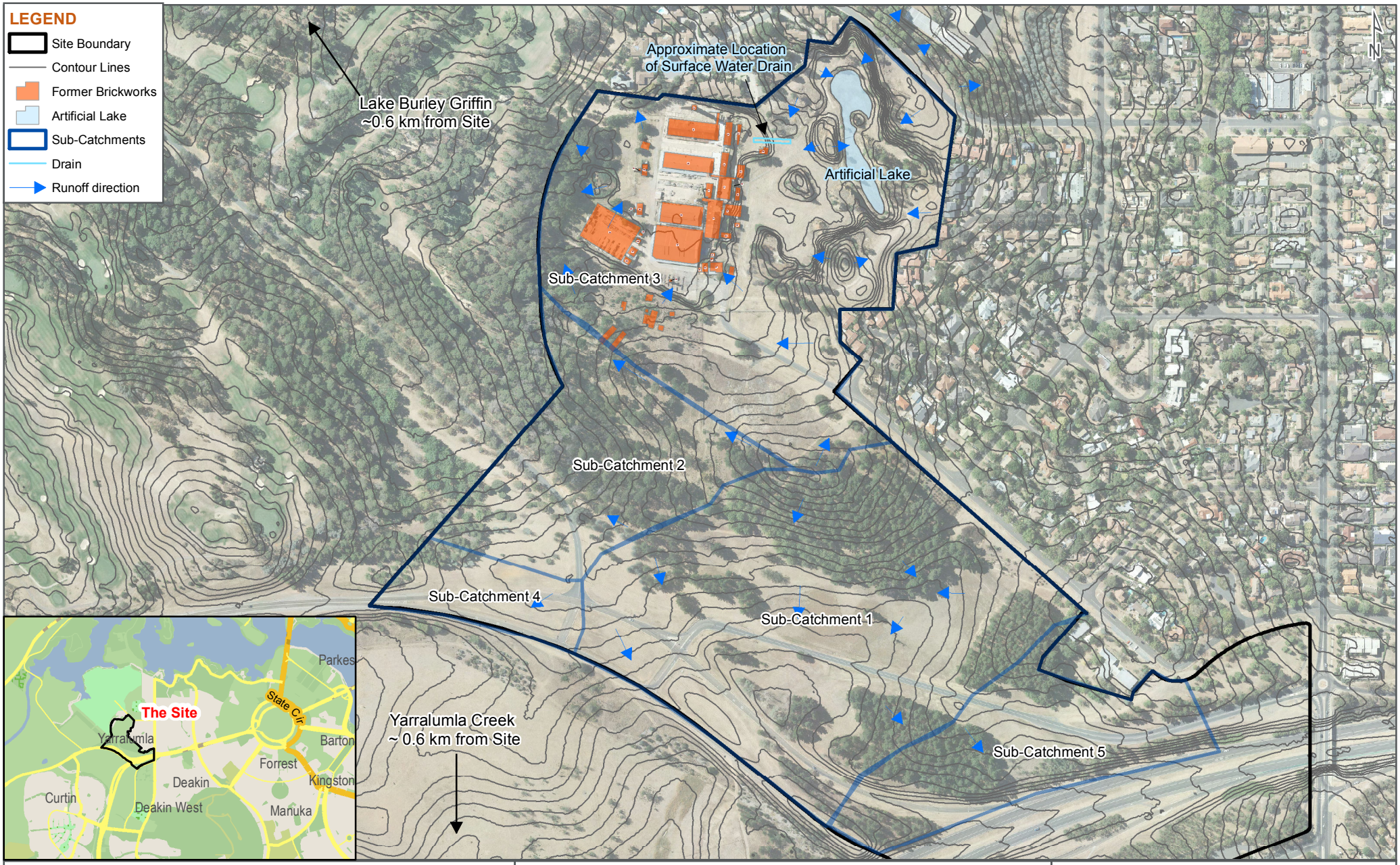

FIG NO. 2c	**FIGURE TITLE** Topography, Sub-Catchments and Drainage	**DATE** 17/02/2014	0 50 100 200 Meters 1:5,600	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © BingMaps, Imagery © Roadnet		

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Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 2d - Catchment Top and Drainage.mxd

FIG NO. 3a	**FIGURE TITLE** Historical Aerial Photograph - 1951	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 3.mxd

FIG NO. 3b	**FIGURE TITLE** Historical Aerial Photograph - 1958	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

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FIG NO. 3c	**FIGURE TITLE** Historical Aerial Photograph - 1968	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

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FIG NO. 3d	**FIGURE TITLE** Historical Aerial Photograph - 1978	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

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FIG NO. 3e	**FIGURE TITLE** Historical Aerial Photograph - 1988	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

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FIG NO. 3f	**FIGURE TITLE** Historical Aerial Photograph - 1998	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

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FIG NO. 3g	**FIGURE TITLE** Historical Aerial Photograph - 2009	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

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FIG NO. 3h	**FIGURE TITLE** Historical Aerial Photograph - 2012	**DATE** 3/10/2013	0 50 100 200 1:6,500 Meters	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Canberra Brickworks Preliminary Site Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © ACTMapi, Imagery © Roadnet		

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Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 3.mxd

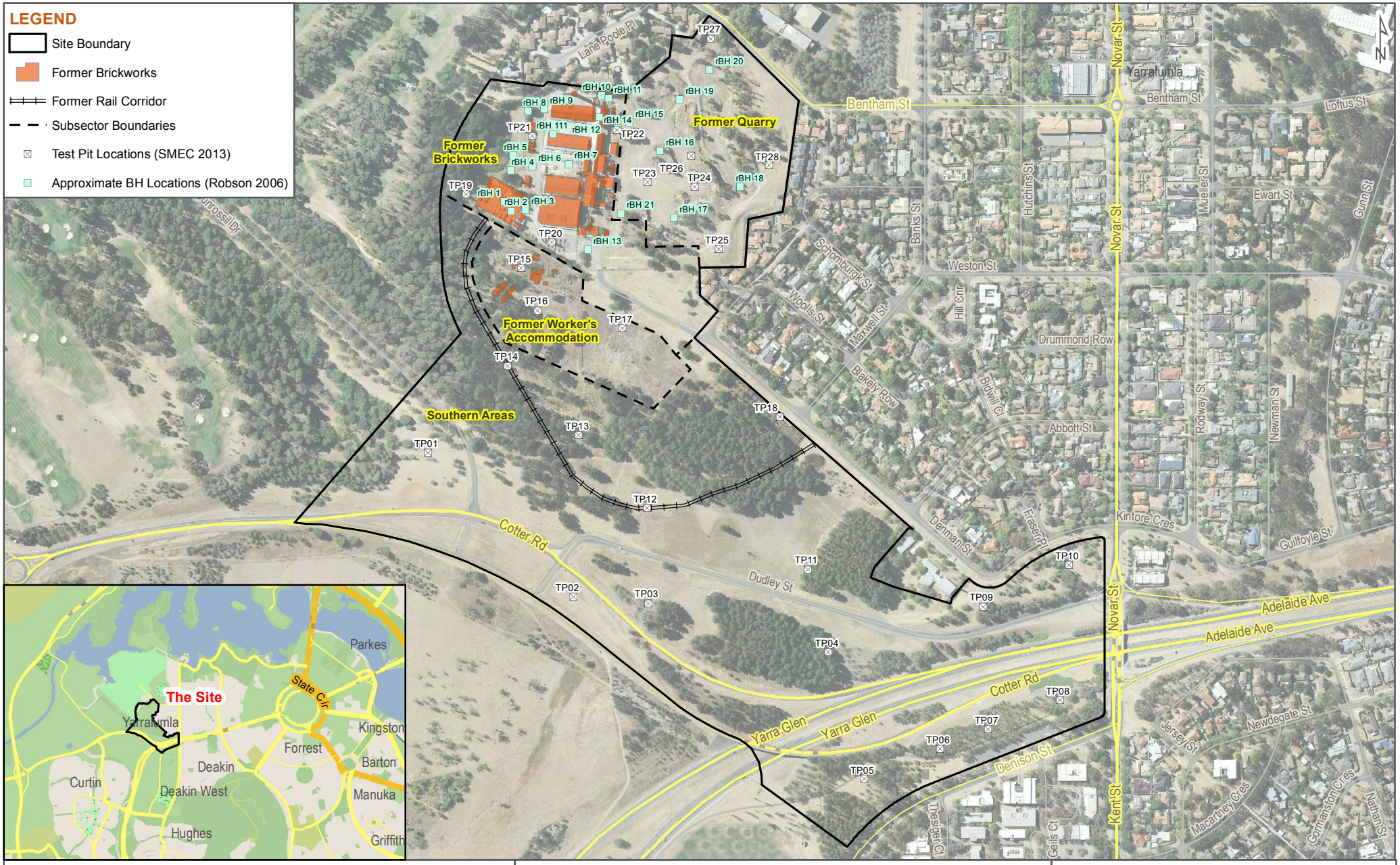


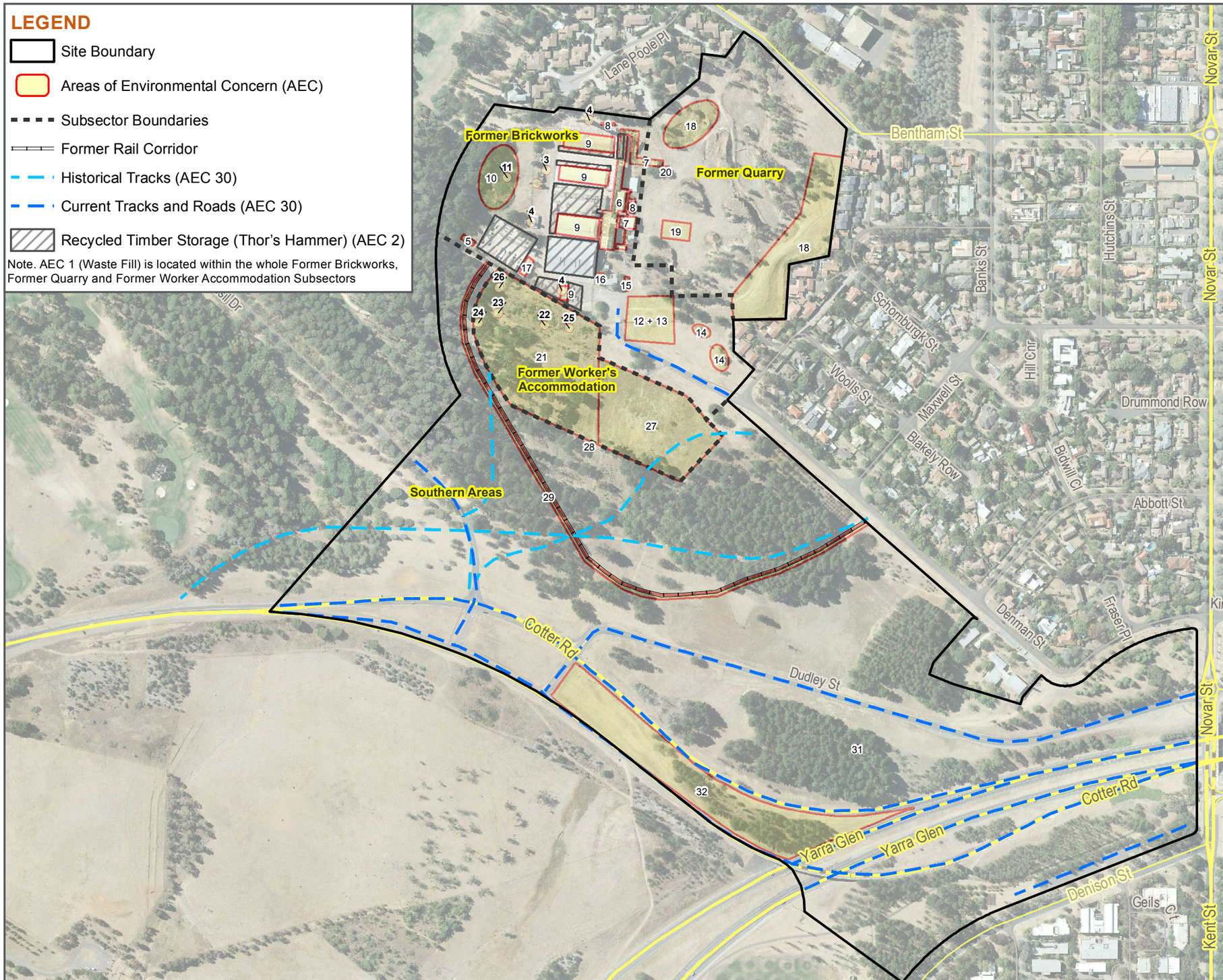
FIG NO. 4	**FIGURE TITLE** Test Pit and Borehole Locations	**DATE** 17/02/2014	0 50 100 200 Meters 1:6,500	**PAGE SIZE** A4	**COORDINATE SYSTEM** ACT Grid 1966
PROJECT NO. 3002369	**PROJECT TITLE** Yarralumla Brickworks Environmental Investigation	**CREATED BY** J. Seng	**SOURCES** Imagery © Bing Maps, Imagery © Roadnet		

Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 4.mxd

LEGEND

- Site Boundary
- Areas of Environmental Concern (AEC)
- Subsector Boundaries
- Former Rail Corridor
- Historical Tracks (AEC 30)
- Current Tracks and Roads (AEC 30)
- Recycled Timber Storage (Thor's Hammer) (AEC 2)

Note. AEC 1 (Waste Fill) is located within the whole Former Brickworks, Former Quarry and Former Worker Accommodation Subsectors



AEC	Description
1	Waste Fill
Former Brickworks	
2	Recycled Timber Storage (Thor's Hammer)
3	UST(s) and Forklift Shed (former)
4	Stackhouse(s)
5	Explosive Store (former)
6	Machinery Shed(s)
7	Operation of Crusher and Refinery Plant(s)
8	Coal/Oil Storage Facility(ies)
9	Kiln Sand
10	Asbestos Dump
11	Septic Tank
12	Carpenters Workshop (former)
13	Former Kiln(s)
14	Fill Mound(s)
15	Weighbridge (former)
16	Power House and Underground Conduits
17	Boiler House and adjoining Substation (former)
Former Quarry	
18	Fill Mound(s)
19	Clay Storage Shed (former)
20	Weatherboard Cottage (former)
Brickworks Workers Accommodation	
21	Workers Accommodation (former) – General Areas and Former Buildings
22	Interceptor Pit
23	Abandoned Vehicle
24	Dumping Area
25	Scrap Metal Stockpile
26	Fill Mound
27	Cleared Area
28	Explosive Store (former)
Southern Areas	
29	Rail Corridor
30	Vehicle Tracks (site wide)
31	Waste Pile
32	Fill (Road)

FIG NO. 5

FIGURE TITLE Areas of Environmental Concern

DATE 17/02/2014

0 35 70 140 Meters

1:6,500

PAGE SIZE A3

COORDINATE SYSTEM ACT Grid 1966

PROJECT NO. 3002369

PROJECT TITLE Canberra Brickworks Preliminary Site Investigation

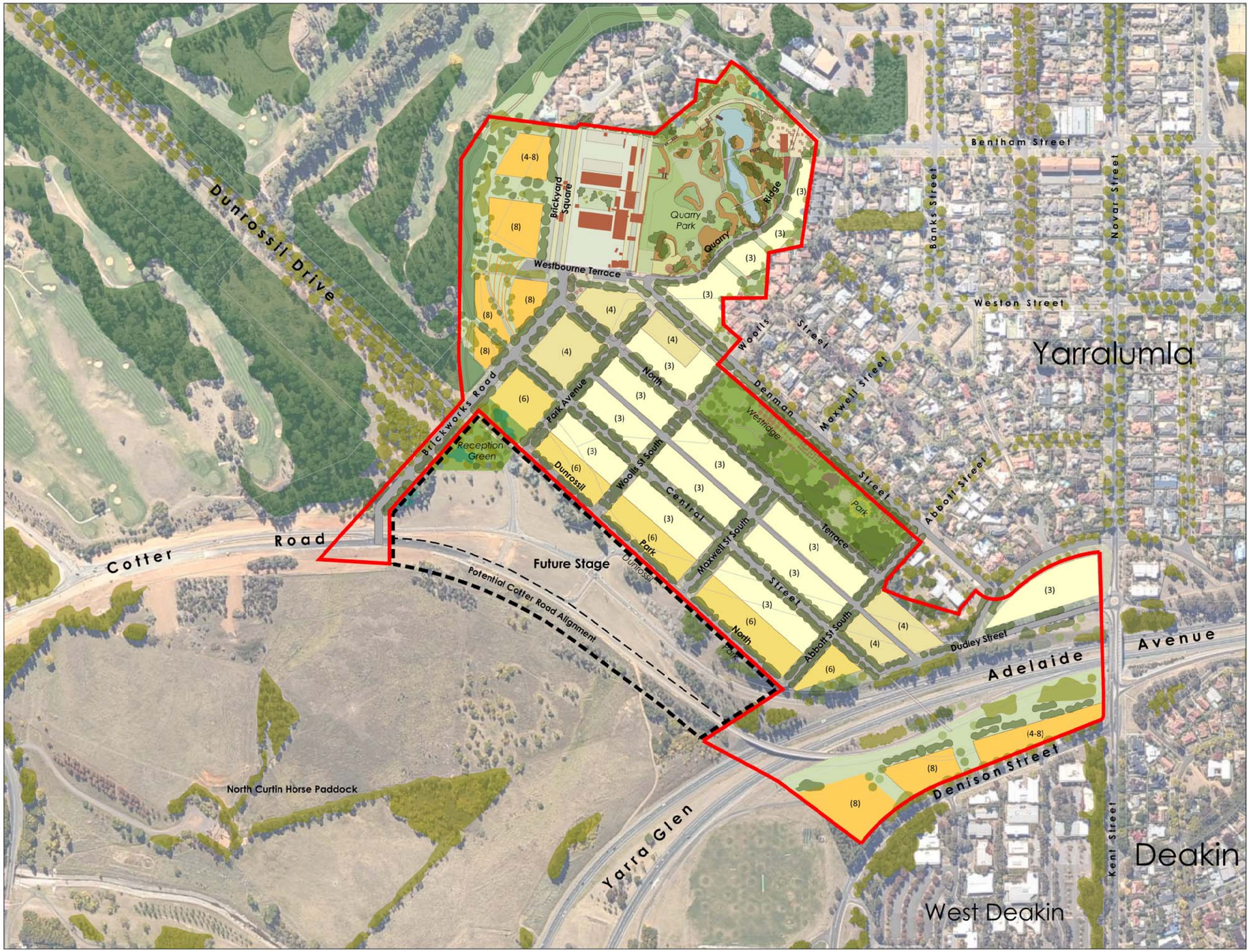
CREATED BY J. Seng

SOURCES Imagery © Bing Maps, Imagery © Roadnet

SMEC Celebrating 40 years 1970 - 2010

Location: X:\PROJECT\3002369 Yarralumla Brickworks Site Investigation\6 Delivery\6.2 Figures and Result Tables\6.2.1 GIS\Figure 5.mxd

APPENDIX B: DRAFT MASTERPLAN



CANBERRA BRICKWORKS AND ENVIRONS MASTER PLAN

ACT Government
Economic Development

Land Development Agency
CANBERRA FIRST

SEPTEMBER 2013
P00311 - CB+E MP

APPENDIX C: DATA QUALITY OBJECTIVES

DATA QUALITY OBJECTIVIES

Data Quality Objectives

The Data Quality Objective (DQO) process for this project has been derived from the NSW DEC (2006) "Guidelines for the NSW Site Auditor Scheme (2nd Edition)" and the NEPM (1999) "Guideline on Data Collection, Sample Design and Reporting". The DQO process is a seven step process to assist the development of sampling programs that support the decision making process.

Step 1: State the Problem

Problem Definition

At present there is limited data on the contamination status of the Site. A review of available historical data indicates there is potential for significant contamination to be present.

The Planning Team

This team has been selected to work together through the seven steps of the project DQO process. The size of the planning team reflects the complexity of the project, however as the DQO Process is iterative, team members may be added to address areas of expertise not initially considered.

Decision Makers and Stakeholders

- LDA Project Manager: Gary Travis
- SMEC Project Manager: Peter Hicks
- SMEC Senior Environmental Scientist: Nathalie O'Toole
- SMEC Environmental Scientist: John O'Brien

Stakeholders

Stakeholders are individuals and organisations that are directly affected by a decision, interested in a problem, and want to be involved, offer input, or seek information. The involvement of stakeholders early on in the DQO process can provide a forum for communication as well as foster trust in the decision making process. At this stage it is envisaged that communication is limited to LDA staff and individuals directly involved in the project. Future communication and consultation may include the following stakeholders:

- Current users of the Site (Thor's Hammer);
- ACT Environment Protection Authority (EPA); and
- Yarralumla Residents Association.

Step 2 : Identify the Decision

The purpose of this step is to define the decision statement that the study will attempt to resolve, based on the problem stated above in Step 1. The Principal Study Question can therefore be summarised as:

> *To assess the potential risks posed by contamination and obtain sufficient data to allow the development of strategies to remediate and/or manage the contamination to an end land use that is suitable for the proposed redevelopment.*

Project Decisions include:

- Do the Site soils and/or groundwater contain concentrations of contaminants of concern (CoC) above the ACT EPA endorsed assessment criteria for the current and proposed land use;
- Do current concentrations of contaminants pose a human health or ecological risk to the receptors of concern;
- Determine the pathways of exposure for human and ecological receptors;
- Is there sufficient data to develop the scope for further investigation or remedial strategies; and
- Can the Site be made suitable for the proposed future land use.

Step 3: Identify the Inputs to the Decision

Introduction

The primary inputs required to be measured by the PSI sampling program are:

- Identify and undertake limited assessment of the areas of environmental concern;
- Assess in greater detail the current site conditions (i.e. topography, hydrogeology) and their potential to influence the migration of contamination;
- Aesthetic impacts in residual surface and deeper soils caused by contamination, including staining, odours and visible asbestos;
- Determine preliminary data on the background quality of soils at the Site;
- Use of appropriate sampling techniques to obtain representative samples from the Site;
- Use of NATA accredited laboratories for selected analysis of sampled medium (soil, surface water, groundwater)
- Determine the migration potential of contamination (if any) at the Site;
- Determine the type and location of contamination;
- ACT Environment Protection Authority and National Environment Protection Measures (NEPM) endorsed adopted site assessment criteria; and
- ACT Environment Protection Authority endorsed site investigation and environmental guidelines.

- The following sections more specifically identify the DQOs associated with key fieldwork components of the assessment.

DQO Decision Inputs

Purpose & Required Information

The purpose of the intrusive investigation works is to visually inspect subsoils and to obtain samples of soils and groundwater for chemical analysis.

Fieldwork information requirements are:

- Maps of the Areas of Environmental Concern;
- Logs of the soil profile;
- Information on the nature of materials encountered during works;
- Photographic logs of Site conditions and features; and
- Collection of representative soil samples in accordance with ACT Environment Protection Authority endorsed criteria, for chemical analysis at NATA accredited laboratories.

Information Sources

The grid based sampling plan was designed to provide preliminary geotechnical data for future development within the Site (TP01 to TP14); environmental samples were collected at these locations to assess for background soil conditions. The sampling plan is presented in Figure 4 **Appendix A**.

The remainder of the sampling locations were targeted to either confirm previous soil data or to fill data gaps to better inform the recommendations outlined in this PSI.

Determining the Action Level

Field screening of soil samples, based upon:

- Visual or olfactory evidence of contamination.

Step 4: Define the Study Boundaries

The study boundaries include spatial and temporal boundaries of the site, including potential receptors of concern. The “Study Boundaries” have been divided into the following descriptors:

- Target population (subsurface boundaries to include fill, residual soils and bedrock);
- Geographic boundaries (the Site boundary as presented in Table 1 **Appendix A**); and
- Temporal boundaries.

Target Population

The target population for this study comprises the environmental samples of:

- Surface and subsurface soils.

The decision makers will base assessment and management decisions on information gained from these target populations.

The conditions of these populations [soils] will be compared to the adopted site assessment criteria to determine the response to the Principal Study Question.

Geographic Boundaries

The geographic boundaries of the data collection and decision making process for this project are shown in Figure 1 **Appendix A**.

Temporal Boundaries

The temporal boundaries included in the decision making process are based the persistence of potential contaminants of concern in the environment and the mobility of potential soil contamination. Metals and PAH are considered to be persistent contaminants, with potential impacts occurring over time scales of 10 years or more.

Step 5: Decision Rules

As the PSI has been developed to provide preliminary contamination data, the following key drivers and relevant decision rules that will be applied in the decision making process:

- Assess the need for further investigation at the Site to assess the identified areas of environmental concern;
- The risk to current and future users of the Site; and
- Potential impacts to offsite receptors (water bodies)

The analytical and field data generated through the PIS sampling program will be compared to the adopted site assessment, and the decision rules become:

- If contaminant concentrations in soils are greater than adopted soil investigation levels then consider further investigation;
- If contaminant concentrations in soils are less than adopted soil investigation levels then consider the data gaps, further investigation may still be recommended;
- If aesthetic issues (i.e. visible waste material) remain then consider further remediation works.

Step 6: Tolerable Limits On Decision Errors

The Tolerable Limits of Decision Errors establish the Data Quality Indicators (DQIs), by which the data collected during the limited Phase 2 ESA sampling program is measured. The DQIs are summarised as follows:

Data representativeness:

- Use of appropriately trained field personnel to collect data and investigate site conditions. Careful soil logging to confirm nature and depth of impact has been removed and residual impacts documented.

Documentation and Data completeness:

- Site conditions properly described;
- Sample locations to be properly described and recorded on field notes/logs;

- Field records are appropriately completed;
- Completion of calibration results, chain of custody documentation, laboratory reports from National Association of Testing Authorities registered laboratories;
- Collection of representative samples from each identified area of environmental concern. Locations are recorded to enable relocation at the completion of the project;
- Samples are tested for appropriate Contaminants of Concern (CoC). Field parameters (as required) including olfactory assessment.

Data Comparability:

- Appropriate techniques are used for sample handling (including sampling, storage and transport);
- Use of NATA accredited test methods in primary laboratory using NEPM procedures;
- Use of NATA accredited test methods in check/secondary laboratory using NEPM procedures.
- Precision and accuracy for sampling and analysis:
- Blind duplicates to be collected at a rate of 1:20 and analysed in the primary laboratory;
- Triplicate samples to be collected at a rate of 1:20 and analysed by the check/secondary laboratory;
- Relative Percentage Differences (RPDs) for inorganic analytes to be less than 30%;
- RPDs for organic analytes to be less than 50%;
- Acceptable quality of field blanks, trip blanks and trip spikes; and
- Acceptable data quality control results by the laboratories are achieved.

Step 7: Optimisation Of The Data Collection Process

The grid based sampling plan was designed to provide preliminary geotechnical data for future development within the Site; environmental samples were collected at these locations to assess for background soil conditions. The sampling plan is presented in Figure 4 **Appendix A**. The remainder of the sampling locations were targeted to either confirm previous soil data or to fill data gaps to better inform the recommendations outlined in this PSI.

The investigation was undertaken in general accordance with the initial sampling plan, slight changes to the locations were made during the fieldwork component of the PSI based on observational data to:

- Ensure a dynamic sampling plan that allowed flexibility to locate test pits based on the proposed design and field observations;
- Targeting sampling at the most significant areas of environmental concern at the Site.

It is noted that the PSI was to provide preliminary contamination data and all identified areas of environmental concern were not targeted as part of the investigation.

APPENDIX D: GROUNDWATER BORE SEARCH

ACT Government
Environment and Sustainable Development

Mr John O'Brien
SMEC
Email: john.o'brien@smec.com

Dear Mr O'Brien

I refer to your application for a groundwater bore search with a 2 km buffer zone of Block 1 Section 102 Yarralumla. There are three (3) privately managed groundwater abstraction bores registered under the *Water Resources Act 2007* within the search area

Bore Number	Construction Date	Depth of Bore	Static Water Level
WU36	Unknown	43m	35m
WU105	Unknown	Unknown	Unknown
WU609	Unknown	Unknown	Unknown

There is also one (1) investigation or monitoring bores ('Woden3') within the 2km buffer, and a fourth groundwater abstraction bore (WU611) just outside of the search area. No further information is available for either 'Woden3' or WU611.

Please note that this search does not include bores associated with contaminated sites. If you require more information please contact Contaminated Sites (Environment Protection Authority) on 132281.

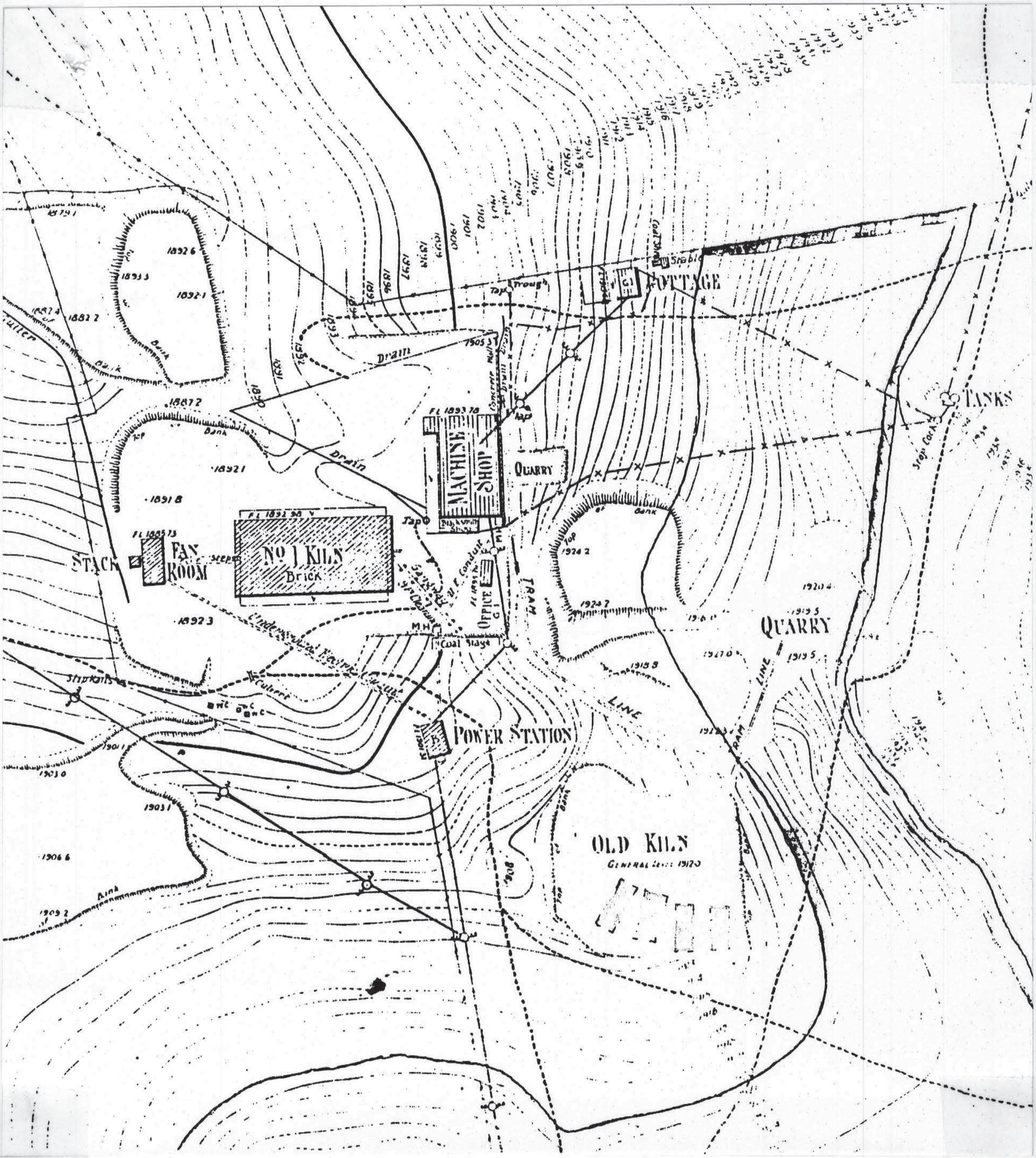
If you have any questions please contact me on (02) 6207 1354 or email Ronald.chesham@act.gov.au.

Yours sincerely

Ron Chesham
Environment Protection Officer
Water Regulation
3 October 2013

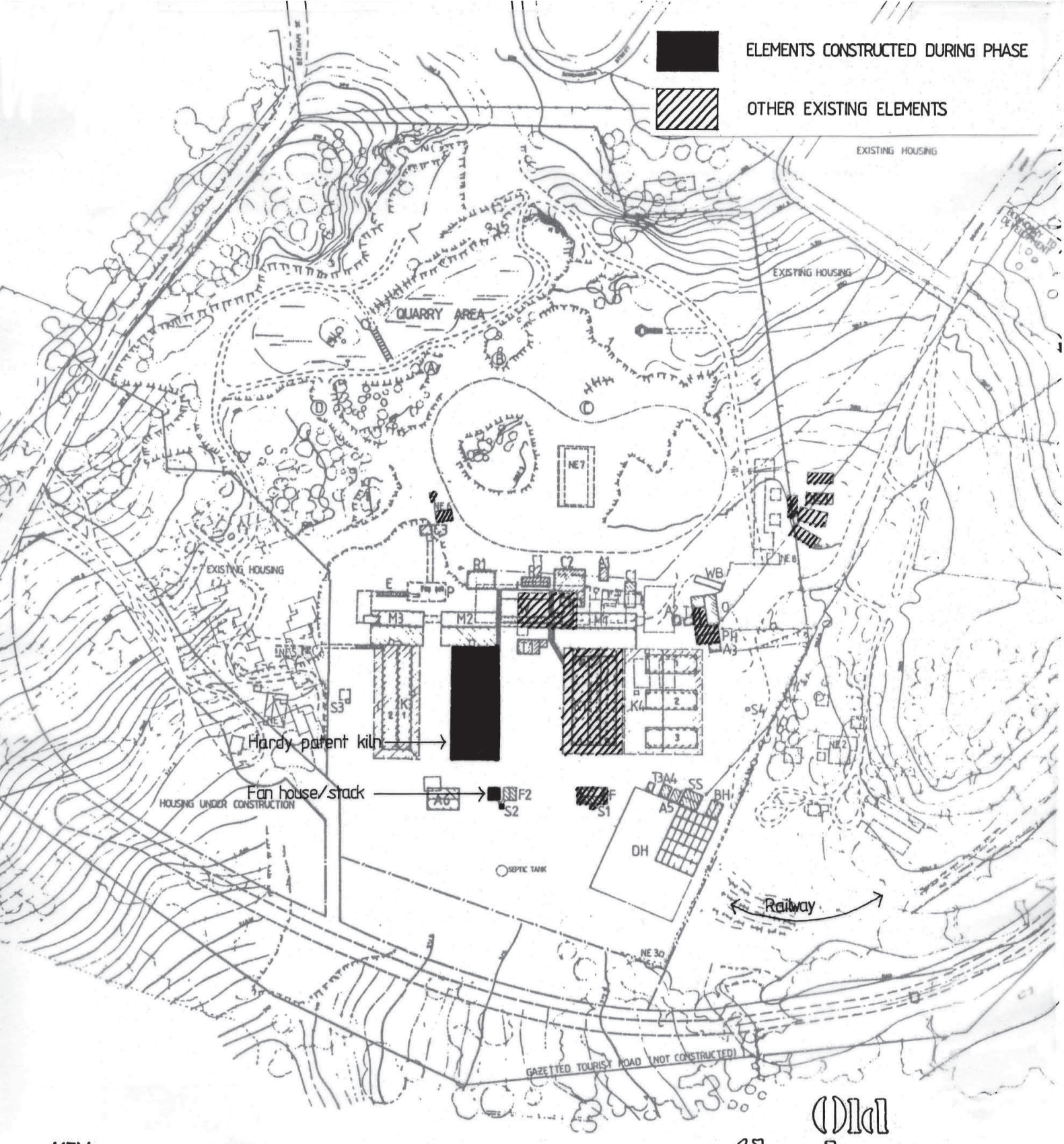
Environment Protection and Water Regulation
Environment and Sustainable Development Directorate
Dame Pattie Menzies House - 16 Challis Street - Dickson ACT 2602
GPO Box 158 Canberra ACT 2601
Telephone 132281 - Facsimile 6207 6084

APPENDIX E: HISTORICAL PLANS



Old Canberra Brickworks

EXTRACT FROM
DECEMBER 1916 SURVEY



Old Canberra Brickworks

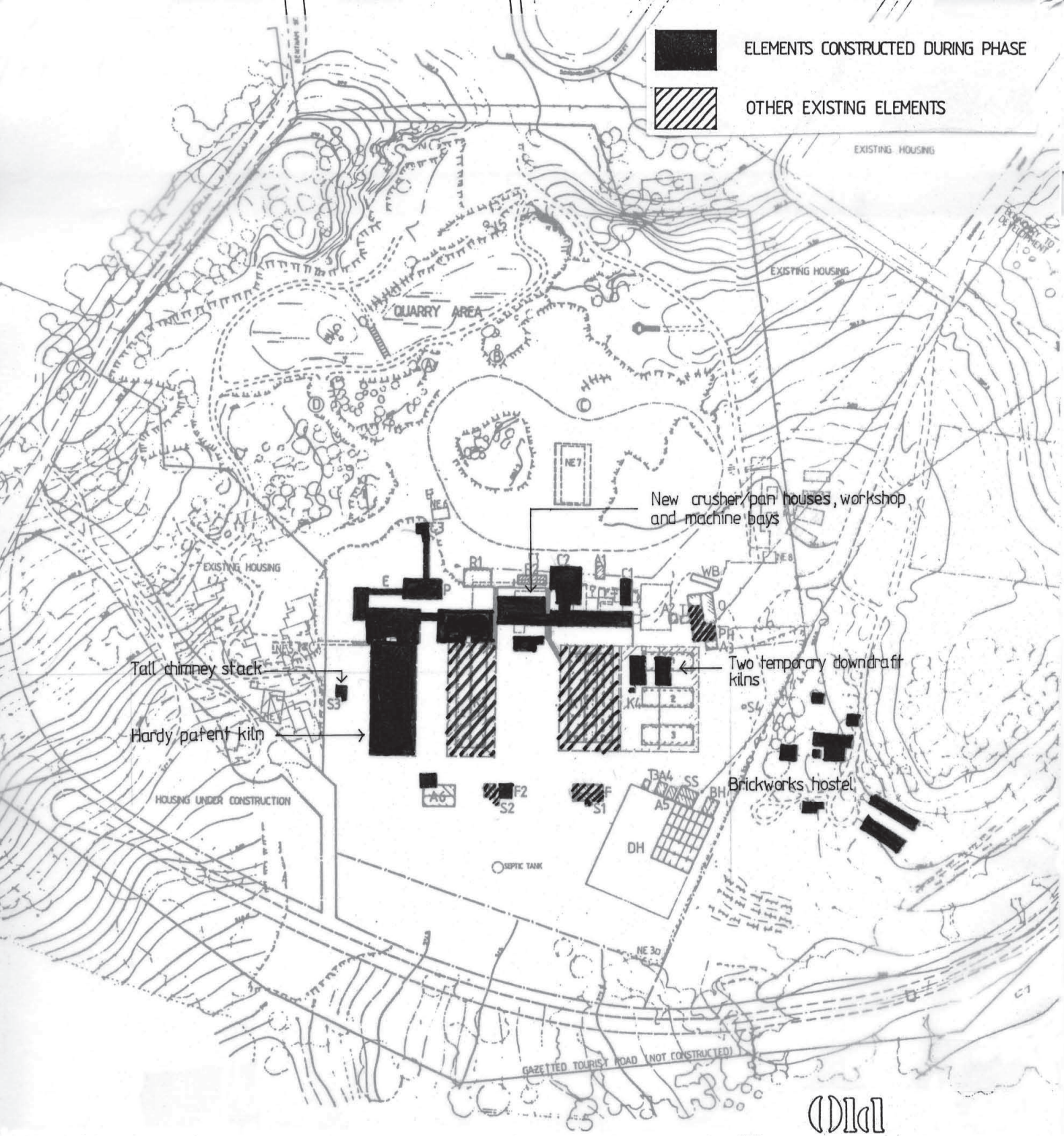
EXPANSION PHASE mid 1920's

Lester Firth Associates Pty Ltd

0 10 20 30 50 100 m

KEY

K1 Kiln . Staffordshire c 1915
K2 Kiln . Hardy Patent c 1927
K3 Kiln . Hardy Patent c 1953
K4 Kiln . Downdraft c 1961
F1 Fan House for Staffordshire c 1915
F2 Fan House for Patent c 1927
S1 Chimney Stack for Staffordshire c 1915
S2 Chimney Stack for Patent c 1927
S3 Chimney Stack for Patent c 1953
S4 Chimney Stack for Downdraft c 1961
M1 Machine Bay for Staffordshire and Downdraft c 1955 (also Brick Press Building 1)
M2 Machine Bay Patent c 1955
M3 Machine Bay Patent c 1955
W Workshop c 1955
C1 Small Crusher House (Hazemeg)
C2 Large Crusher House (or Pan Building) c 1955
C3 Primary Crusher House c 1955
P Pan Building Site c 1955
E Elevator Conveyor c 1955
O Offices c 1916
PH Power House c 1915
WB Weighbridge c 1960's
T1 Toilet Block (lockers, lunch & first aid) c 1947/50
T2 Minor toilet block
T3 Minor toilet block
BH Boiler House c 1971
SS Sub Station and Control Room c 1971
DH Drying House and Slab c 1971
R1 Railway (model) Workshop c 1979
R2 Railway (model) Storage Shed c 1979
Q Quarry Brickpit
A Geological Monument
B Geological Monument
C Geological Monument
D Geological Monument
A1 Ancillary Building Storage Shed c 1958
A2 Ancillary Building Studio/Shed
A3 Ancillary Building Studio/Shed Former Burners Hut
A4 Ancillary Building Studio/Shed
A5 Ancillary Building Studio/Shed
A6 Forklift Shed c 1965
NE1 Site of 1913 Temporary Open kilns and workshop
NE2 Site of Brickworks Camp (Accommodation village)
NE3 Site of Explosives Store
NE4 Site of Weatherboard Cottage
NE5 Site of oil tank/coal store
NE6 Site of Cottage and associated buildings 1916
NE7 Site of Clay Storage Area (shed)
NE8 Site of Carpenters Shed



Old Canberra Brickworks

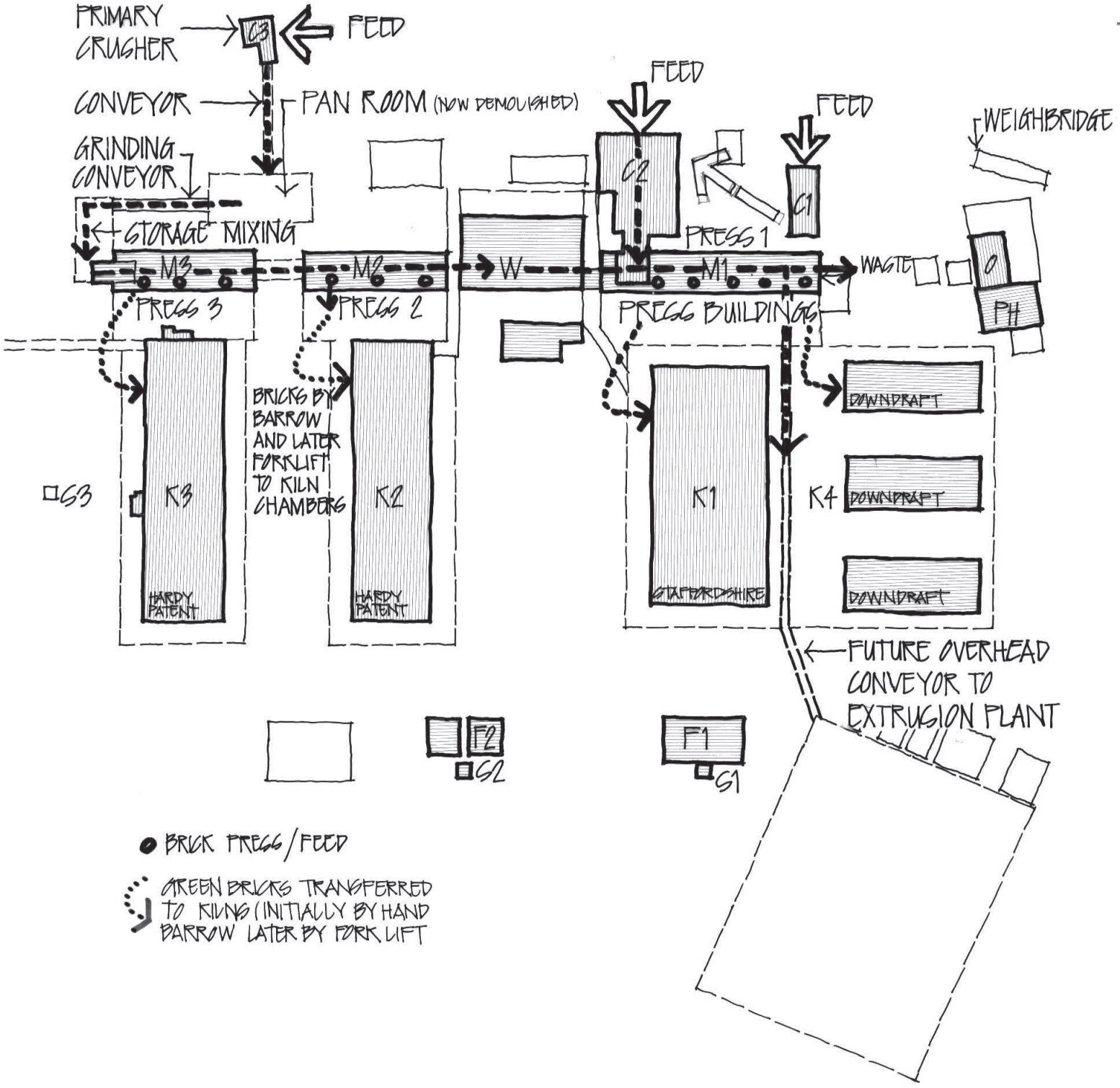
EXPANSION PHASE 1950's

KEY

K1 Kiln . Staffordshire c 1915
K2 Kiln . Hardy Patent c 1927
K3 Kiln . Hardy Patent c 1953
K4 Kiln . Downdraft c 1963
F1 Fan House for Staffordshire c 1915
F2 Fan House for Patent c 1927
S1 Chimney Stack for Staffordshire c 1915
S2 Chimney Stack for Patent c 1927
S3 Chimney Stack for Patent c 1953
S4 Chimney Stack for Downdraft c 1963
M1 Machine Bay for Staffordshire and Downdraft c 1955 (also Brick Press Building 1)
M2 Machine Bay Patent c 1955
M3 Machine Bay Patent c 1955
W Workshop c 1955
C1 Small Crusher House (Hazemeg)
C2 Large Crusher House (or Pan Building) c 1955
C3 Primary Crusher House c 1955
P Pan Building Site c 1955
E Elevator Conveyor c 1955
O Offices c 1916
PH Power House c 1915
WB Weighbridge c 1960's
T1 Toilet Block (lockers, lunch & first aid) c 1947/50
T2 Minor toilet block
T3 Minor toilet block
BH Boiler House c 1971
SS Sub Station and Control Room c 1971
DH Drying House and Slab c 1971
R1 Railway (model) Workshop c 1979
R2 Railway (model) Storage Shed c 1979
Q Quarry Brickpit
A Geological Monument
B Geological Monument
C Geological Monument
D Geological Monument
A1 Ancillary Building Storage Shed c 1958
A2 Ancillary Building Studio/Shed
A3 Ancillary Building Studio/Shed Former Burners Hut
A4 Ancillary Building Studio/Shed
A5 Ancillary Building Studio/Shed
A6 Forklift Shed c 1965
NE1 Site of 1913 Temporary Open kilns and workshop
NE2 Site of Brickworks Camp (Accomodation village)
NE3 Site of Explosives Store
NE4 Site of Weatherboard Cottage
NE5 Site of oil tank/coal store
NE6 Site of Cottage and associated buildings 1916
NE7 Site of Clay Storage Area (shed)
NE8 Site of Carpenters Shed

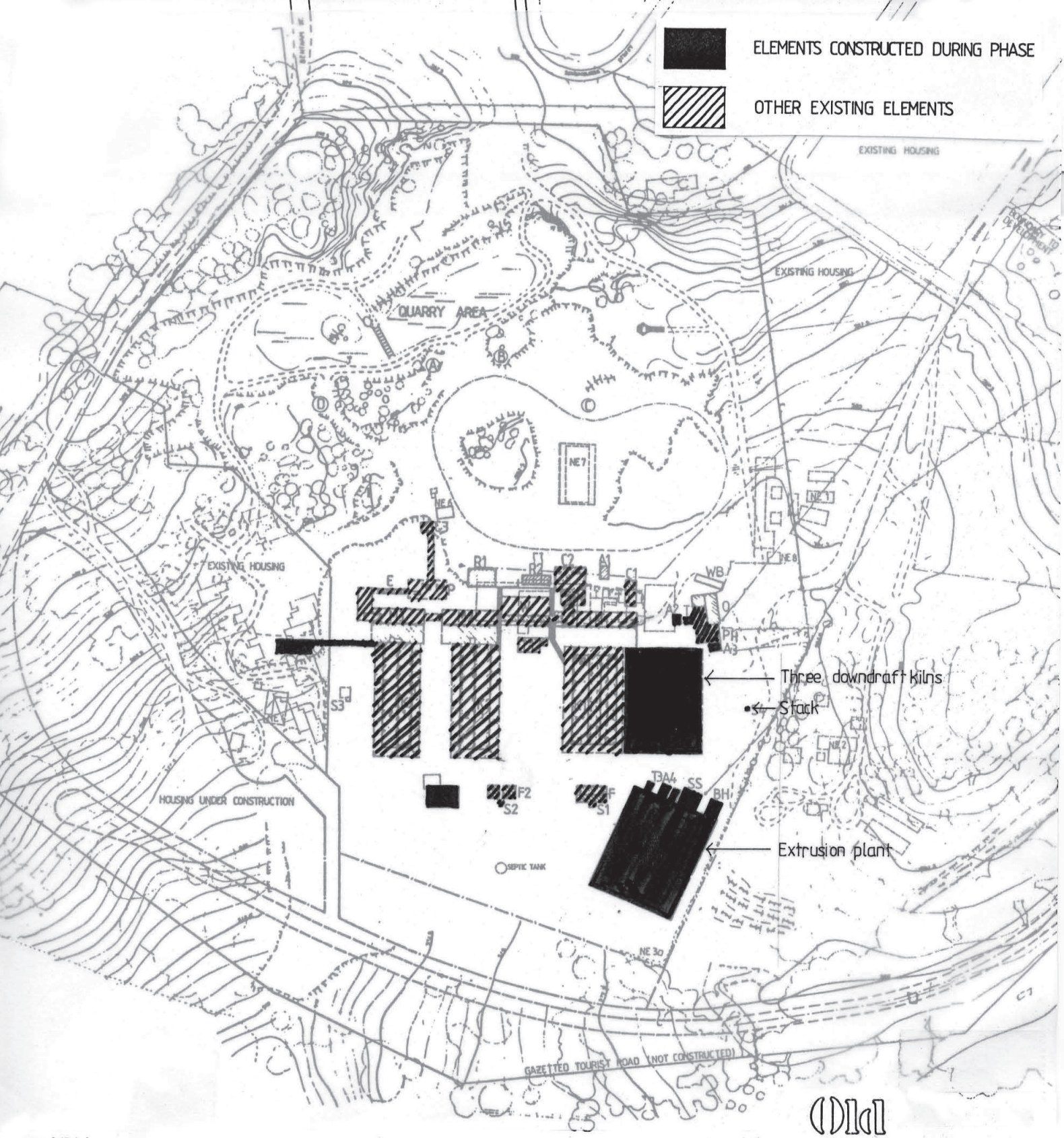
Lester Firth Associates Pty Ltd

0 10 20 30 50 100 m



Old Canberra Brickworks

PROCESS c.1960



Old Canberra Brickworks

EXPANSION PHASE 1960 – mid 1970's

KEY

K1 Kiln . Staffordshire c 1915
K2 Kiln . Hardy Patent c 1927
K3 Kiln . Hardy Patent c 1953
K4 Kiln . Downdraft c 1963
F1 Fan House for Staffordshire c 1915
F2 Fan House for Patent c 1927
S1 Chimney Stack for Staffordshire c 1915
S2 Chimney Stack for Patent c 1927
S3 Chimney Stack for Patent c 1953
S4 Chimney Stack for Downdraft c 1963
M1 Machine Bay for Staffordshire and Downdraft c 1955 (also Brick Press Building 1)
M2 Machine Bay Patent c 1955
M3 Machine Bay Patent c 1955
W Workshop c 1955
C1 Small Crusher House (Hazemeg)
C2 Large Crusher House (or Pan Building) c 1955
C3 Primary Crusher House c 1955
P Pan Building Site c 1955
E Elevator Conveyor c 1955
O Offices c 1916
PH Power House c 1915
WB Weighbridge c 1960's
T1 Toilet Block (lockers, lunch & first aid) c 1947/50
T2 Minor toilet block
T3 Minor toilet block
BH Boiler House c 1971
SS Sub Station and Control Room c 1971
DH Drying House and Slab c 1971
R1 Railway (model) Workshop c 1979
R2 Railway (model) Storage Shed c 1979
Q Quarry Brickpit
A Geological Monument
B Geological Monument
C Geological Monument
D Geological Monument
A1 Ancillary Building Storage Shed c 1958
A2 Ancillary Building Studio/Shed
A3 Ancillary Building Studio/Shed Former Burners Hut
A4 Ancillary Building Studio/Shed
A5 Ancillary Building Studio/Shed
A6 Forklift Shed c 1965
NE1 Site of 1913 Temporary Open kilns and workshop
NE2 Site of Brickworks Camp (Accommodation village)
NE3 Site of Explosives Store
NE4 Site of Weatherboard Cottage
NE5 Site of oil tank/coal store
NE6 Site of Cottage and associated buildings 1916
NE7 Site of Clay Storage Area (shed)
NE8 Site of Carpenters Shed

Lester Firth Associates Pty Ltd

0 10 20 30 50 100 m

APPENDIX F: ESDD CONTAMINATED LAND SEARCH

ACT Government
Environment and Sustainable Development

File Ref: 99/2645

Mr John O'Brien
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Ave
Lyneham ACT 2602

RE: CONTAMINATED LAND SEARCH

Dear Mr O'Brien

Thank you for your search form request of 20/09/2013 enquiring about:

Blocks 1, 7 and 20 Section 102 Yarralumla Canberra Central

Records held by the Environment Protection Authority (EPA) for the above block(s) indicate the following:

The blocks are recorded on the EPA's contaminated sites management database and geographic information system.

There are records of an abandoned commercial brickworks on Blocks 1, 7 and 20 Section 102 Yarralumla.

The EPA has received a phase1 environmental assessment report prepared by Cornell Wagner dated February 2001 for the former brickworks site. The report identified a number of areas of environmental concern which included underground fuel storage, coal storage, explosive storage, landfill areas and brickworks buildings and kilns and a list of possible contaminants which included: hydrocarbons, PAHs, PCBs, BTEX, heavy metals and asbestos.

The EPA supported the consultant's recommendations that further assessment, remediation and validation was required at the site and included that any further assessment would require independent audit by an EPA accredited environmental auditor.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the ACT EPA 2009, Contaminated Sites Environment Protection Policy (CSEPP) list fuel storage facilities, brickworks and landfilling as activities associated with land contamination.

A draft remedial action plan for the remediation of identifed asbestos material in soil at the site was received by the EPA in 2007. The EPA has no records to indicate that these works were undertaken.

The EPA also received a contaminated land notification under the *Environment Protection Act 1997* from ACT Property Group in 2007 in relation to identified contamination at the site.

The ACT Government's "Strategic Plan for Contaminated Sites Management 1995" and the CSEPP specifically requires that potentially contaminated land be investigated at the earliest stages of the planning process to ensure a site is suitable for the proposed development.

Due to the large quantity of asbestos sheeting at the site and the likelihood of fuel storage you or your client should also contact WorkSafe ACT on (02) 6205 0200 regarding the status of any fuel storage facilities at the site and the status of any asbestos abatement work at the site.

The EPA has not issued any environment protection orders under sections 91C (1), 91D (1) or 125 (4) of the *Environment Protection Act 1997* (the Act) over the sites and as a result the sites are not recorded on the Register of contaminated sites under section 21(A) of the Act.

The information detailed above only relates to records held by the EPA and may not represent the actual condition of the site.

At present the EPA has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

Mark Heckenberg

Mark Heckenberg
Project Officer
Environment Protection and Water Regulation

23/09/2013

ACT Government
Environment and Sustainable Development

File Ref: 97/5182; 97/5209; 97/19894

Mr John O'Brien
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Ave
Lyneham ACT 2602

RE: CONTAMINATED LAND SEARCH

Dear Mr O'Brien

Thank you for your search form request of 20/09/2013 enquiring about:

Block 1 Section 75 Deakin Canberra Central

Block 3 Section 94, Block 2 Section 103, Block 1 Section 113, Block 7 Section 121, and Block 1 Section 127 Yarralumla Canberra Central

Block 1 Section 123 Curtin Woden Valley

Records held by the Environment Protection Authority (EPA) for the above block(s) indicate the following:

The blocks are not recorded on the EPA's contaminated sites management database or geographic information system.

The EPA has not issued any environment protection orders under sections 91C (1), 91D (1) or 125 (4) of the *Environment Protection Act 1997* (the Act) over the sites and as a result the sites are not recorded on the Register of contaminated sites under section 21(A) of the Act.

At present the EPA has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

Mark Heckenberg
Project Officer
Environment Protection and Water Regulation
23/09/2013

ACT Government
Environment and Sustainable Development

File Ref: 97/05209

Mr John O'Brien
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Ave
Lyneham ACT 2602

RE: CONTAMINATED LAND SEARCH

Dear Mr O'Brien

Thank you for your search form request of 03/10/2013 enquiring about:

Block 4 Section 65 Deakin Canberra Central

Records held by the Environment Protection Authority (EPA) for the above block(s) indicate the following:

The block is not recorded on the EPA's contaminated sites management database or geographic information system.

EPA records indicate that the site is currently occupied by public playing fields. Whilst there is no recorded information on potential site contamination, public playing fields have been associated in the past with site contamination due to the application of certain chemicals for the control of weeds and pests and the placement of uncontrolled fill during the establishment of the fields. The storage of herbicides/pesticides may also have been undertaken at the site for the above purpose.

The EPA has not issued any environment protection orders under sections 91C (1), 91D (1) or 125 (4) of the Environment Protection Act 1997 (the Act) over the site and as a result the site is not recorded on the Register of contaminated sites under section 21(A) of the Act.

The information detailed above only relates to records held by the EPA and may not represent the actual condition of the site.

At present EPA has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

Mark Heckenberg

Mark Heckenberg
Project Officer
Environment Protection and Water Regulation

08/10/2013

ACT Government
Environment and Sustainable Development

TAX INVOICE

Date: 03/10/2013

Receipt Number: 1269112248

To:
Mr John O'Brien
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Ave
Lyneham ACT 2602

Quantity	Description of Supply	Price	Total
	Contaminated Land Search		
1	Block 4, Section 65, Deakin, Canberra Central	$39.90	$39.90
TOTAL AMOUNT PAID			$39.90

THE TOTAL PRICE INCLUDES GST

APPENDIX G: DANGEROUS GOODS

OFFICE OF REGULATORY SERVICES
DEPARTMENT OF JUSTICE & COMMUNITY SAFETY

2 September 2013

John O'Brien
SMEC Australia Pty Ltd
Suite 2, Level 1
243 Northbourne Ave
LYNEHAM ACT 2602

Thank you for your application for a records search for the Block 1 and 7 Section 10 Old Canberra Brickworks, Denman Street Yarralumla ACT.

I have conducted a search of the Dangerous Substances Register and the Dangerous Goods Database and hold no records for the above block and section.

(Please note: Under the *Dangerous Goods Act 1975* (1975 to April 2004), tanks of 50,000 litres which contained Diesel were not required to be licenced with WorkCover, only if the capacity was over 50,000 litres).

If you have any questions in relation to this matter please do not hesitate in contacting me on 62076353 or email lisa.curran@act.gov.au.

Regards

Lisa Curran
Administration Officer
Dangerous Substances Licencing
WorkSafe ACT

WORKSAFE ACT
LVL 3 CALLAM OFFICES EASTY STREET PHILLIP ACT 2606 |
GPO BOX 158 CANBERRA ACT 2601 |
PHONE 6207 3000 | FAX 6205 0336 |
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APPENDIX H: SITE PHOTOGRAPHIC LOG

SITE PHOTOGRAPHIC LOG

PHOTO ID: 1	CANBERRA BRICKWORKS
DATE: 2/10/13 **DESCRIPTION:** The brickworks are currently used by Thor's Hammer for the storage of recycled wood	

PHOTO ID: 2	
DATE: 2/10/13 **DESCRIPTION:** Remnant brick buildings, some showing signs of disrepair.	

PHOTO ID: 3	CANBERRA BRICKWORKS
DATE: 2/10/13 **DESCRIPTION:** Sheen observed in drains at the rear of Machine Shed 1	
PHOTO ID: 4	
DATE: 2/10/13 **DESCRIPTION:** Remnant structure of crusher plants. Several rusted oil drums (labelled lubrication oil) were also noted.	

PHOTO ID: 5	CANBERRA BRICKWORKS
DATE: 2/10/2013 **DESCRIPTION:** General areas around the machinery sheds were littered with empty drums, scrap metal and other waste materials	

PHOTO ID: 6	
DATE: 20/8/2013 **DESCRIPTION:** Remnant concrete footing of machinery used in the crushing and transporting of raw materials to the machinery shed. The disused oil pressure/storage tank located left of the footings. Crusher House 3 is located in the background.	

PHOTO ID: 7	CANBERRA BRICKWORKS
DATE: 2/10/2013 **DESCRIPTION:** Northern fill mound at the quarry. Observed to comprise reworked natural soils, brick waste and quarry overburden. Several fragments of ACM were observed.	
PHOTO ID: 8	
DATE: 2/10/2013 **DESCRIPTION:** Remnant brick structure, pieces of brick, concrete and structural steel observed.	

PHOTO ID: 9	CANBERRA BRICKWORKS
DATE: 2/10/2013 **DESCRIPTION:** Interceptor pit located adjacent to remnant brick structure. Purpose is unclear. Likely used to receive domestic wash (oils, fats cleaning products).	
PHOTO ID: 10	
DATE: 2/10/2013 **DESCRIPTION:** Abandoned vehicle overgrown with grass and black berry bushes.	

PHOTO ID: 11	CANBERRA BRICKWORKS
DATE: 2/10/2013 **DESCRIPTION:** Two concrete lined pits were located adjacent to remnants of an unnamed vehicle track (currently used by pedestrians	
PHOTO ID: 12	
DATE: 2/10/2013 **DESCRIPTION:** The pits were empty with soil material, broken tiles and glass bottles observed at the base.	

PHOTO ID: 13	CANBERRA BRICKWORKS
DATE: 2/10/2013 **DESCRIPTION:** The material comprised bricks, metal, and general waste and was approximated to be 10 m^3. Several fragments of ACM were also observed.	
PHOTO ID: 12	
DATE: 2/10/2013 **DESCRIPTION:** The pits were empty with soil material, broken tiles and glass bottles observed at the base.	

APPENDIX I: SOIL ANALYTICAL TABLES

						BTEX							Halogenated Benzenes	Lead	Metals											
			Benzo(b&j)fluoranthene	Carcinogenic PAHs (as BaP TEQ)	TRH C37-C40	TRH C6-C10 minus BTEX (F1)	Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	Hexachlorobenzene	Lead	Arsenic	Beryllium	Boron	Cadmium	Chromium (hexavalent)	Cobalt	Copper	Manganese	Mercury	Nickel	Selenium	Zinc
			mg/kg	TEQ	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.2	100	25	0.1	0.1	0.1	0.6	0.2	0.1	0.3	0.1	1	3	0.3	5	0.3	0.5	0.3	0.5	0.3	0.01	0.5	2	0.5
CSM NEPM Residential A Soil														10	300	100	60	4500	20	100	100	6000	3800	40	400	200	7400
CSM NEPM Residential B Soil														15	1200	500	90	40000	150	500	600	30000	14000	120	1200	1400	60000
CSM NEPM Recreational C Soil														10	600	300	90	20000	90	300	300	17000	19000	80	1200	700	30000
CSM NEPM Residential HSL A & B for Vapour Intrusion, 0 to <1m, Sand							1	330	1300		220	220	220														
CSM NEPM P EIL															1100	100						210			270		770
Field_ID	**Date**	**SDG**																									
TP01-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	19	3	0.5	<5	<0.3	<0.5	8.4	10	620	0.02	7.8	<2	41
TP02-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	18	<3	0.7	<5	<0.3	<0.5	4.4	6.5	250	0.02	4.3	<2	22
TP03-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	35	9	1.1	<5	<0.3	<0.5	15	16	1200	0.01	13	<2	49
TP04-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	15	<3	0.6	<5	<0.3	<0.5	6.2	8.6	310	0.01	11	<2	45
TP05-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	39	6	0.7	<5	<0.3	<0.5	8.4	14	720	0.02	11	<2	68
TP06-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	54	5	0.4	<5	<0.3	<0.5	5.2	10	900	0.02	6.2	<2	56
TP07-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	93	8	0.8	<5	<0.3	<0.5	12	15	830	0.03	8.8	<2	50
TP08-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	47	5	0.6	<5	<0.3	<0.5	8.7	12	530	0.02	8.8	<2	49
TP09-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	52	6	0.5	<5	<0.3	<0.5	6.7	11	410	0.02	7.9	<2	75
TP10-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	62	4	0.8	<5	<0.3	<0.5	18	23	1500	0.03	9	<2	34
TP11-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	23	7	0.8	<5	<0.3	<0.5	13	16	820	0.02	20	<2	46
TP12-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	15	4	0.5	<5	<0.3	<0.5	6.3	7.1	360	0.02	8.3	<2	110
TP13-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	21	11	0.6	<5	<0.3	<0.5	6.8	8.2	650	0.02	6.5	<2	27
TP14-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	17	<3	0.4	<5	<0.3	<0.5	6	8.1	880	0.01	6.8	<2	30
TP15-0.0	9/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	130	6	0.6	<5	0.6	<0.5	7.8	32	800	0.19	8.8	<2	260
TP16-0.0	9/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	110	7	0.6	<5	<0.3	<0.5	17	13	1200	0.02	9.8	<2	95
TP17-0.0	9/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	25	8	0.6	<5	<0.3	<0.5	8.2	9.6	390	0.01	12	<2	49
TP18-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	<0.1	49	8	1.1	<5	<0.3	<0.5	30	17	1900	0.02	19	2	18
TP19-0.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	160	4	<0.3	6	<0.3	<0.5	3.1	70	160	0.01	9.4	<2	44
TP20-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	10	<3	<0.3	<5	<0.3	<0.5	1.8	3.2	73	0.01	3.1	<2	7.9
TP21-0.5	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	34	5	0.6	<5	<0.3	<0.5	5.5	30	350	0.02	12	<2	93
TP21-1.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	37	11	0.6	30	<0.3	<0.5	7.2	25	270	0.02	21	<2	71
TP22-0.5	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	51	7	1.1	8	<0.3	<0.5	8.8	17	400	0.03	19	<2	96
TP22-1.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	-	29	13	1	11	<0.3	<0.5	10	27	630	0.01	37	<2	150
TP23-0.5	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	28	9	0.8	<5	<0.3	<0.5	9.9	19	460	0.02	19	<2	55
TP23-2.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	29	8	0.7	<5	<0.3	<0.5	15	14	730	0.01	20	<2	66
TP24-0.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	10	4	0.4	<5	<0.3	<0.5	5.6	7.6	210	0.01	7.5	<2	24
TP25-0.5	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	31	12	0.7	<5	<0.3	<0.5	12	21	720	0.03	22	<2	74
TP25-2.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	32	10	0.8	7	<0.3	<0.5	13	20	640	0.04	24	<2	79
TP26-0.5	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	25	6	0.7	<5	<0.3	<0.5	12	22	1100	0.01	18	<2	53
TP26-2.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	24	5	0.7	<5	<0.3	<0.5	11	39	740	<0.01	19	<2	65
TP27-0.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	23	10	0.7	<5	<0.3	<0.5	11	12	520	0.04	17	<2	45
TP28-0.5	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	14	6	0.8	<5	<0.3	<0.5	11	22	970	0.01	22	<2	49
TP28-2.0	11/09/2013	SE120709-1	<0.1	<0.2	<100	<25	<0.1	<0.1	<0.1	<0.6	<0.2	<0.1	<0.3	<0.1	11	7	0.8	<5	<0.3	<0.5	12	20	620	<0.01	24	<2	38

EIL = Ecological Investigation Levels (residnetial/open space - aged)
HSL = Health Screening Level
HIL = Health Based Investigation Limit
EQL = Estimated Quantitation Limit
n.d = Non-detect

			Organochlorine Pesticides																									Pesticides			Phenolics	Other		
			2,4-DDT	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane (cis)	gamma-Chlordane	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	o,p-DDD	o,p'-DDE	trans-Nonachlor	Isodrin	Mirex	Parathion	Phenols	Estimated Fibres	Azinophos methyl	Bromophos-ethyl
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	100	0.2	0.2
CSM NEPM Residential A Soil							6							240					10				6		300					10					
CSM NEPM Residential B Soil							10							600					20				10		500					20					
CSM NEPM Recreational C Soil							10							400					20				10		400					20					
CSM NEPM Residential HSL A & B for Vapour Intrusion																																			
CSM NEPM P EIL														180																					
Field_ID	**Date**	**SDG**																																	
TP01-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP02-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP03-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP04-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP05-0.0	9/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP06-0.0	9/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP07-0.0	9/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP08-0.0	9/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP09-0.0	9/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP10-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP11-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP12-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	0	<0.2	<0.2
TP13-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP14-0.0	9/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP15-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
TP16-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
TP17-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
TP18-0.0	10/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	-	-	<0.2	<0.2
TP19-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
TP20-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21-1.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP22-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
TP22-1.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
TP23-0.5	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	0.1	0	<0.2	<0.2
TP23-2.0	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	0	<0.2	<0.2
TP24-0.0	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	0.2	0	<0.2	<0.2
TP25-0.5	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	0	<0.2	<0.2
TP25-2.0	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	0	<0.2	<0.2
TP26-0.5	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	0	<0.2	<0.2
TP26-2.0	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	0	<0.2	<0.2
TP27-0.0	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	0.3	0	<0.2	<0.2
TP28-0.5	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	0	<0.2	<0.2
TP28-2.0	11/09/2013	SE120709-1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	0	<0.2	<0.2

EIL = Ecological Investigation Levels (residnetial/open sp
HSL = Health Screening Level
HIL = Health Based Investigation Limit
EQL = Estimated Quantitation Limit
n.d = Non-detect

			Organophosphorous Pesticides								PAH/Phenols																				Polychlorinated Biphenyls						
			Chlorpyrifos	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Methidathion	1-Methylnaphthalene	2-methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Carcinogenic PAHs as B(a)P TPE	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.2	0.5	0.5	0.5	0.2	0.2	0.2	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CSM NEPM Residential A Soil			160															3									300									
CSM NEPM Residential B Soil			340															4									400									
CSM NEPM Recreational C Soil			250															3									300									
CSM NEPM Residential HSL A & B for Vapour Intrusion.																																				
CSM NEPM P EIL																										170										
Field_ID	**Date**	**SDG**																																		
TP01-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05-0.0	9/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06-0.0	9/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07-0.0	9/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08-0.0	9/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09-0.0	9/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14-0.0	9/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	-	-	-	-	-	-	-
TP16-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	-	-	-	-	-	-	-
TP17-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	-	-	-	-	-	-	-
TP18-0.0	10/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	-	-	-	-	-	-	-
TP20-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	-	-	-	-	-	-	-
TP21-1.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	-	-	-	-	-	-	-
TP22-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	0.1	<0.1	-	-	-	-	-	-	-
TP22-1.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	-	-	-	-	-	-	-
TP23-0.5	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP23-2.0	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP24-0.0	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP25-0.5	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP25-2.0	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP26-0.5	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP26-2.0	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP27-0.0	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP28-0.5	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP28-2.0	11/09/2013	SE120709-1	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

EIL = Ecological Investigation Levels (residnetial/open sp
HSL = Health Screening Level
HIL = Health Based Investigation Limit
EQL = Estimated Quantitation Limit
n.d = Non-detect

				TPH										Explosives Suite																					
	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)	C10-C16	C16-C34	C34-C40	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10	HMX	RDX	1.3.5-TNB	1.3-DNB	Tetryl	NB	TNT	4-Amino-2.6-Dinitrotoluene	2-Amino-4.6-Dinitrotoluene	DNT	2-MNT	3-MNT	4-MNT	PETN	NG	1.4-DNB	2-Amino-4.6-Dinitrotoluene	4-Amino-2.6-Dinitrotoluene	1.3-DNB	1.4-DNB
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L
EQL	0.2	0.2	1	25	90	120	20	20	45	45	110	210	25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0
CSM NEPM Residential A Soil			1																															
CSM NEPM Residential B Soil			1																															
CSM NEPM Recreational C Soil			1																															
CSM NEPM Residential HSL A & B for Vapour Intrusion,				130									180																					
CSM NEPM P EIL																																		

Field_ID	Date	SDG																																	
TP01-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15-0.0	9/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16-0.0	9/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17-0.0	9/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19-0.0	11/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d
TP20-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21-0.5	11/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21-1.0	11/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP22-0.5	11/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP22-1.0	11/09/2013	SE120709-1	-	-	-	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP23-0.5	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP23-2.0	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP24-0.0	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP25-0.5	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP25-2.0	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP26-0.5	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP26-2.0	11/09/2013	SE120709-1	<0.2	<0.2	<1	35	110	<120	<20	<20	120	<45	120 - 152.5	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP27-0.0	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28-0.5	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28-2.0	11/09/2013	SE120709-1	<0.2	<0.2	<1	<25	<90	<120	<20	<20	<45	<45	<110	<210	<25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

EIL = Ecological Investigation Levels (residnetial/open sp
HSL = Health Screening Level
HIL = Health Based Investigation Limit
EQL = Estimated Quantitation Limit
n.d = Non-detect

			DNT	HMX	2-MNT	3-MNT	4-MNT	NB	NG	PETN	RDX	Tetryl	1.3.5-TNB	TNT
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			0	0	0	0	0	0	0	0	0	0	0	0
CSM NEPM Residential A Soil														
CSM NEPM Residential B Soil														
CSM NEPM Recreational C Soil														
CSM NEPM Residential HSL A & B for Vapour Intrusion,														
CSM NEPM P EIL														
Field_ID	**Date**	**SDG**												
TP01-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP02-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP03-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP04-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP05-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP06-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP07-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP08-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP09-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP10-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP11-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP12-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP13-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP14-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP15-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP16-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP17-0.0	9/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP18-0.0	10/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP19-0.0	11/09/2013	SE120709-1	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d
TP20-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP20-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP21-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP21-1.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP22-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP22-1.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP23-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP23-2.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP24-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP25-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP25-2.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP26-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP26-2.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP27-0.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP28-0.5	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-
TP28-2.0	11/09/2013	SE120709-1	-	-	-	-	-	-	-	-	-	-	-	-

EIL = Ecological Investigation Levels (residnetial/open sp
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n.d = Non-detect

SDG	SE120709-1	SE120709-1		SE120709-1	SE120709-1		SE120709-1	Interlab_D		SE120709-1	Interlab_D	
Field_ID	TP28-0.5	QC 111	RPD	TP21-1.0	QC 112	RPD	TP26-0.5	QC110	RPD	TP22-0.5	QC113	RPD
Sampled_Date-Time	11/09/2013	11/09/2013		11/09/2013	11/09/2013		11/09/2013	11/09/2013		11/09/2013	11/09/2013	
Chem_Gro **ChemName**	**Units**	**EQL**										
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0							
Carcinogenic PAHs (as BaP TEQ)	TEQ	0.2	<0.2	<0.2	0	<0.2	<0.2	0							
TRH C37-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0							
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25.0	<25.0	0	<25.0	<25.0	0							
BTEX	Benzene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Benzene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Ethylbenzene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Toluene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Total BTEX	mg/kg	0.6	<0.6	<0.6	0	<0.6	<0.6	0						
	Xylene (m & p)	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
	Xylene (o)	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Xylene Total	mg/kg	0.3	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0
Halogenat	Hexachlorobenzene	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
Lead	Lead	mg/kg	1 (Primary): 5 (Interlab)	14.0	10.0	33	**37.0**	**27.0**	**31**	25.0	25.0	0	**51.0**	**36.0**	**34**
Metals	Arsenic	mg/kg	3 (Primary): 2 (Interlab)	6.0	4.0	40	11.0	9.0	20	6.0	3.2	61	7.0	3.8	**59**
	Beryllium	mg/kg	0.3 (Primary): 2 (Interlab)	0.8	0.5	46	0.6	0.6	0	0.7	<2.0	0	1.1	<2.0	0
	Boron	mg/kg	5 (Primary): 10 (Interlab)	<5.0	<5.0	0	30.0	46.0	42	<5.0	<10.0	0	8.0	<10.0	0
	Cadmium	mg/kg	0.3 (Primary): 0.4 (Interlab)	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.4	0	<0.3	<0.4	0
	Chromium (hexavalent)	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<1.0	0	<0.5	<1.0	0
	Cobalt	mg/kg	0.3 (Primary): 5 (Interlab)	**11.0**	**7.0**	**44**	7.2	6.7	7	**12.0**	**6.7**	**57**	8.8	9.1	3
	Copper	mg/kg	0.5 (Primary): 5 (Interlab)	**22.0**	**10.0**	**75**	25.0	28.0	11	**22.0**	**11.0**	**67**	17.0	16.0	6
	Manganese	mg/kg	0.3 (Primary): 5 (Interlab)	970.0	730.0	28	270.0	250.0	8	**1100.0**	**480.0**	**78**	400.0	470.0	16
	Mercury	mg/kg	0.01 (Primary): 0.05 (Interlab)	0.01	<0.01	0	0.02	0.01	**67**	0.01	<0.05	0	0.03	<0.05	0
	Nickel	mg/kg	0.5 (Primary): 5 (Interlab)	**22.0**	**12.0**	**59**	21.0	20.0	5	**18.0**	**9.0**	**67**	19.0	15.0	24
	Selenium	mg/kg	2	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	2.1	5
	Zinc	mg/kg	0.5 (Primary): 5 (Interlab)	49.0	48.0	2	71.0	60.0	17	**53.0**	**33.0**	**47**	96.0	120.0	22
Organochl	2,4-DDT	mg/kg	0.1	<0.1	<0.1	0									
	4,4-DDE	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	a-BHC	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Aldrin	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	b-BHC	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Chlordane (cis)	mg/kg	0.1	<0.1	<0.1	0									
	gamma-Chlordane	mg/kg	0.1	<0.1	<0.1	0									
	d-BHC	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	DDD	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	DDT	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Dieldrin	mg/kg	0.2 (Primary): 0.05 (Interlab)	<0.2	<0.2	0				<0.2	<0.05	0			
	Endosulfan I	mg/kg	0.2 (Primary): 0.05 (Interlab)	<0.2	<0.2	0				<0.2	<0.05	0			
	Endosulfan II	mg/kg	0.2 (Primary): 0.05 (Interlab)	<0.2	<0.2	0				<0.2	<0.05	0			
	Endosulfan sulphate	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Endrin	mg/kg	0.2 (Primary): 0.05 (Interlab)	<0.2	<0.2	0				<0.2	<0.05	0			
	Endrin aldehyde	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Endrin ketone	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	g-BHC (Lindane)	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Heptachlor	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Heptachlor epoxide	mg/kg	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0				<0.1	<0.05	0			
	Methoxychlor	mg/kg	0.1 (Primary): 0.2 (Interlab)	<0.1	<0.1	0				<0.1	<0.2	0			
	o,p-DDD	mg/kg	0.1	<0.1	<0.1	0									
	o,p'-DDE	mg/kg	0.1	<0.1	<0.1	0									
	trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	0									
Organopho	Azinophos methyl	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Bromophos-ethyl	mg/kg	0.2	<0.2	<0.2	0									
	Chlorpyrifos	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Diazinon	mg/kg	0.5	<0.5	<0.5	0				<0.5	<0.5	0			
	Dichlorvos	mg/kg	0.5	<0.5	<0.5	0				<0.5	<0.5	0			
	Dimethoate	mg/kg	0.5	<0.5	<0.5	0				<0.5	<0.5	0			
	Ethion	mg/kg	0.2	<0.2	<0.2	0									
	Fenitrothion	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Malathion	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Methidathion	mg/kg	0.5	<0.5	<0.5	0									
Other	Estimated Fibres	mg/kg	100	0.0	0.0	0									
PAH/Phen	1-Methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Acenaphthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Acenaphthylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Benz(a)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Benzo(a) pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Chrysene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Fluoranthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Fluorene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Naphthalene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	Naphthalene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0
	PAHs (Sum of total)	mg/kg	0.8 (Primary): 1 (Interlab)	<0.8	<0.8	0	<0.8	<0.8	0	<0.8	<0.5	0	<0.8	0.5	0
	Phenanthrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	0.1	0.5	**133**
	Pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0

	SDG			SE120709-1	SE120709-1		SE120709-1	SE120709-1		SE120709-1	Interlab_D		SE120709-1	Interlab_D	
	Field_ID			TP28-0.5	QC 111	**RPD**	TP21-1.0	QC 112	**RPD**	TP26-0.5	QC110	**RPD**	TP22-0.5	QC113	**RPD**
	Sampled_Date-Time			11/09/2013	11/09/2013		11/09/2013	11/09/2013		11/09/2013	11/09/2013		11/09/2013	11/09/2013	
Pesticides	Isodrin	mg/kg	0.1	<0.1	<0.1	0									
	Mirex	mg/kg	0.1	<0.1	<0.1	0									
	Parathion	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
Phenolics	Phenols	mg/kg	0.1	<0.1	0.1	0									
Polychlorin	Arochlor 1016	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Arochlor 1221	mg/kg	0.2	<0.2	<0.2	0									
	Arochlor 1232	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Arochlor 1242	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Arochlor 1248	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Arochlor 1254	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Arochlor 1260	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0				<0.2	<0.5	0			
	Arochlor 1268	mg/kg	0.2	<0.2	<0.2	0									
	Aroclor 1262	mg/kg	0.2	<0.2	<0.2	0									
	PCBs (Sum of total)	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0				<1.0	<0.5	0			
TPH	C10-C16	mg/kg	25 (Primary): 50 (Interlab)	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<50.0	0	<25.0	<50.0	0
	C16-C34	mg/kg	90 (Primary): 100 (Interlab)	<90.0	<90.0	0	<90.0	<90.0	0	<90.0	<100.0	0	<90.0	<100.0	0
	C34-C40	mg/kg	120 (Primary): 100 (Interlab)	<120.0	<120.0	0	<120.0	<120.0	0	<120.0	<100.0	0	<120.0	<100.0	0
	C6 - C9	mg/kg	20	<20.0	<20.0	0	<20.0	<20.0	0	<20.0	<20.0	0	<20.0	<20.0	0
	C10 - C14	mg/kg	20	<20.0	<20.0	0	<20.0	<20.0	0	<20.0	<20.0	0	<20.0	<20.0	0
	C15 - C28	mg/kg	45 (Primary): 50 (Interlab)	<45.0	<45.0	0	<45.0	48.0	6	<45.0	<50.0	0	<45.0	51.0	13
	C29-C36	mg/kg	45 (Primary): 50 (Interlab)	<45.0	<45.0	0	<45.0	<45.0	0	<45.0	<50.0	0	<45.0	<50.0	0
	+C10 - C36 (Sum of total)	mg/kg	110 (Primary): 50 (Interlab)	<110.0	<110.0	0	<110.0	<110.0	0	<110.0	<50.0	0	<110.0	51.0	0
	C10 - C40 (Sum of total)	mg/kg	210	<210.0	<210.0	0	<210.0	<210.0	0						
	C6-C10	mg/kg	25 (Primary): 20 (Interlab)	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<20.0	0	<25.0	<20.0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1-10 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

APPENDIX J: TEST PIT LOGS

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP01

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 689880.000, N: 6090395.000 (56 MGA94)
SURFACE ELEVATION : 585.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara Stariha
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP01-0.0 (0.0-0.2)	585.0 / 0.0		ML	SILT low plasticity, dark brown, trace gravel, rootlets, no odour, no staining	D	F			TOPSOIL
			0.30m TP01-0.5 (0.3-0.5)								100 200 300 400	0.17: HP In-situ =200 - >450 kPa
							0.37m					
						GW	Sandy GRAVEL medium grained, to 20 mm, well graded, sub-rounded, grey-brown, with silt, no odour, no staining		D			RESIDUAL SOIL
							0.49m					0.43: HP In-situ =375 - >450 kPa
				585.5 / 0.5		CL	CLAY low plasticity, grey mottled orange, trace sand, rootlets, no odour, no staining		Fb			
			0.80m TP01-1.0 (0.8-1.0)									0.74: HP In-situ >450 kPa
				586.0 / 1.0			1.01m					
							DACITE coarse grained, porphyritic, massive, orange with red bands, extremely low strength, highly weathered, highly fractured, no odour, no staining					BEDROCK
							1.16m					
							EXCAVATION TP01 TERMINATED AT 1.16 m Refusal					
				586.5 / 1.5								
				587.0 / 2.0								
				587.5 / 2.5								
				588.0 / 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP02

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690061.000, N: 6090208.000 (56 MGA94)
SURFACE ELEVATION : 594.960 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara Stariha
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP02-0.0 (0.0-0.2)	595.0	0.0		CL	CLAY low plasticity, dark brown, with sand, with grass rootlets, no odour, no staining	D to M	St			TOPSOIL 0.20: HP In-situ =225 - 450 kPa
			0.40m TP02-0.5 (0.4-0.6)		0.40m								FILL
				595.5	0.5		ML	SILT with cobbles low plasticity, dark orange-brown, with gravel, with bitumen, no odour, no staining		S			0.51: HP In-situ =125 - 150 kPa
					0.62m			COBBLES coarse, to 400 mm, well graded, angular, grey, with gravel, with clay, no odour, no staining		MD			
			1.00m TP02-1.0 (1.0-1.2)	596.0	1.0								
			1.20m TP02-1.3 (1.2-1.4)		1.12m			Gravelly SAND coarse grained, to 200 mm, well graded, angular, red-brown, with cobbles, with bitumen, bricks, no odour, no staining	D				1.20: HP In-situ =425 - >450 kPa 1.30: bricks observed
				596.5	1.5		SW			D			
			1.80m QC108 TP02-2.0 (1.8-2.0)	597.0	2.0								1.90: asphalt observed
					2.10m			EXCAVATION TP02 TERMINATED AT 2.10 m Refusal on concrete - Possible abandoned pipe					
				597.5	2.5								
					3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP03

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690156.000, N: 6090198.000 (56 MGA94)
SURFACE ELEVATION : 592.330 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara Stariha
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			QC107 TP03-0.0 (0.0-0.2)	0.0 592.5		CL	CLAY low to medium plasticity, dark brown, with medium grained, well graded, sub-rounded gravel, with grass rootlets, no odour, no staining	D to M	S to F		100 200 300 400	TOPSOIL 0.12: HP In-situ =100 - 150 kPa
			0.30m TP03-0.5 (0.3-0.5)	0.24m		CI	CLAY medium plasticity, grey mottled orange, with medium grained, well graded, sub-rounded gravel, no odour, no staining	M	St			ALLUVIUM 0.37: HP In-situ =175 - 75 kPa
				0.5		CI	Gravelly CLAY medium plasticity, orange mottled grey, with medium to fine grained, well graded, sub-angular gravel, no odour, no staining	W	VSt			0.58: HP In-situ =450 - >450 kPa
			0.80m TP03-1.0 (0.8-1.0)	0.65m 593.0			SILTSTONE fine grained, layered, grey weathered orange, medium strength, highly weathered, slightly fractured, no odour, iron staining in fractures	M				BEDROCK
				1.0 593.5								
			1.80m TP03-2.0 (1.8-2.0)	1.5 594.0								1.65: Ripper used from 1.65 m
				2.00m 2.0			EXCAVATION TP03 TERMINATED AT 2.00 m Refusal					
				594.5								
				2.5 595.0								
				3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP04

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690384.000, N: 6090131.000 (56 MGA94)
SURFACE ELEVATION : 590.490 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara Stariha
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP04-0.0 (0.0-0.2)	590.5 / 0.0		ML	SILT low plasticity, brown, with coarse, angular gravel, with grass rootlets, non odour, non staining		St			TOPSOIL 0.08: HP In-situ >450 - 325 kPa
			0.30m TP04- 0.50 (0.3-0.45)	0.17m			SILTSTONE fine grained, layered, red brown, low strength, moderately weathered, highly fractured, no odour, iron staining in fractures	D				BEDROCK
				0.45m			EXCAVATION TP04 TERMINATED AT 0.45 m Refusal					
				591.0 / 0.5								
				591.5 / 1.0								
				592.0 / 1.5								
				592.5 / 2.0								
				593.0 / 2.5								
				3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP05

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690426.000, N: 6089969.000 (56 MGA94)
SURFACE ELEVATION : 596.650 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER kPa 100 200 300 400	STRUCTURE & Other Observations
			TP05-0.0 (0.0-0.2)	0.0 597.0		ML	Clayey SILT low plasticity, dark brown, with clay, grass rootlets, no odour, no staining	D	S			TOPSOIL
			0.40m TP05-0.5 (0.4-0.6)	0.40m 0.5		CL	Silty CLAY low plasticity, red brown, no odour, no staining		H		X	RESIDUAL SOIL 0.53: HP In-situ =425 kPa
			0.80m TP05-1.0 (0.8-1.0)	0.65m 597.5			SILTSTONE fine grained, layered, pale orange, extremely low strength, extremely weathered, highly fractured, no odour, iron staining				X	ROCK 0.75: HP In-situ >425 kPa
				0.90m 1.0			SILTSTONE fine grained, massive, light grey with orange staining, medium strength, highly weathered, slightly fractured, no odour, iron staining					
				1.15m 598.0 1.5 598.5 2.0 599.0 2.5 599.5 3.0			EXCAVATION TP05 TERMINATED AT 1.15 m Refusal					

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP06

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690523.000, N: 6090005.000 (56 MGA94)
SURFACE ELEVATION : 598.770 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / E / F / H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP06-0.0 (0.0-0.2)	0.0 599.0		ML	SILT low plasticity, brown, trace clay, with grass rootlets, no odour, no staining	D	VSt			TOPSOIL 0.20: HP In-situ >450 kPa
			0.40m TP06-0.5 (0.4-0.6)	0.45m								
			0.80m TP06-1.0 (0.8-1.0)	0.5 599.5		GW	Silty GRAVEL medium grained, to 20 mm, well graded, sub-rounded, light brown, no odour, iron staining		D			ALLUVIUM 0.75: HP In-situ >450 kPa
				1.00m 1.0 600.0			SILTSTONE fine grained, layered, orange brown, extremely low strength, extremely weathered, highly fractured, no odour, iron staining in fractures					BEDROCK 1.25: HP In-situ >450 kPa
			1.50m TP06-1.7 (1.5-1.7)	1.50m 1.5			becoming grey weathered orange in fractures					
				1.60m			becoming grey, high strength, slightly weathered, slightly fractured					
				1.70m 600.5			EXCAVATION TP06 TERMINATED AT 1.70 m Refusal					
				2.0 601.0								
				2.5 601.5								
				3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP07

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690585.000, N: 6090029.000 (56 MGA94)
SURFACE ELEVATION : 593.470 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER kPa 100 200 300 400	STRUCTURE & Other Observations
			TP07-0.0 (0.0-0.2)	593.5	0.0		ML	SILT low plasticity, red brown mottled black, with fine grained gravel, with grass rootlets, no odour, no staining					TOPSOIL 0.20: HP In-situ >450 kPa
			0.40m TP07-0.5 (0.4-0.6)		0.40m								FILL
				594.0	0.5		CL	Gravelly CLAY low plasticity, light grey, well graded, sub-angular gravel, trace sand, no odour, no staining		H			 0.75: HP In-situ >450 kPa
			0.80m TP07-1.0 (0.8-1.0)		1.00m				D				
				594.5	1.0		CL	CLAY low plasticity, pale brown mottled grey, no odour, no staining					RESIDUAL SOIL 1.25: HP In-situ >450 kPa
					1.50m								
			1.70m TP07-1.9 (1.7-1.9)	595.0	1.5			SANDSTONE medium to coarse grained, massive, grey weathered orange, extremely low strength, extremely weathered, no odour, iron staining					BEDROCK 1.60: Ripper from 1.6 m
					1.90m								
								EXCAVATION TP07 TERMINATED AT 1.90 m Refusal					
				595.5	2.0								
				596.0	2.5								
					3.0								

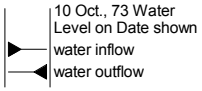
PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION

WATER



SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP08

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690677.000, N: 6090064.000 (56 MGA94)
SURFACE ELEVATION : 595.930 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP08-0.0 (0.0-0.2)	596.0 / 0.0		ML	SILT low plasticity, dark brown, trace sand, with grass rootlets, no odour, no staining		VSt			TOPSOIL 0.25: HP In-situ =250 - 450 kPa
			0.40m TP08-0.5 (0.4-0.6)	0.45m								
				596.5 / 0.5		CL	Sandy CLAY low plasticity, orange-brown, coarse sand, with fine, well graded, sub-rounded gravel, no odour, no staining		H			FILL 0.50: HP In-situ =250 - >450 kPa
				0.55m			Sandy Silty CLAY medium plasticity, red-brown, no odour, iron staining					RESIDUAL SOIL 0.60: Large patch of iron staining
			0.80m TP08-1.0 (0.8-1.0)			CI		D	H			0.75: HP In-situ >450 kPa
			1.00m TP08-1.5 (1.3-1.5)	1.00m / 1.0			DACITE coarse grained, porphyritic, massive, orange-brown, extremely low strength, extremely weathered, no odour, no staining					BEDROCK 1.10: Ripper used from 1.1 m
				597.0								
				1.30m			becoming low strength, slightly weathered					
				1.50m / 1.5			EXCAVATION TP08 TERMINATED AT 1.50 m Refusal					
				597.5 / 2.0								
				598.0 / 2.5								
				598.5 / 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP09

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690582.000, N: 6090185.000 (56 MGA94)
SURFACE ELEVATION : 592.450 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER 100 200 300 400 kPa	STRUCTURE & Other Observations
			TP09-0.0 (0.0-0.2)	0.0 592.5		ML	SILT low plasticity, light brown, with fine grained sand, with grass rootlets, no odour, no staining		H			TOPSOIL 0.20: HP In-situ >450 kPa
			0.40m TP09-0.5 (0.4-0.6)	0.5 593.0		CL-CI	0.36m CLAY low to medium plasticity, orange-brown, trace fine grained sand, no odour, no staining					RESIDUAL SOIL 0.49: HP In-situ >450 kPa
			0.80m TP09-1.0 (0.8-1.0)	1.0 593.5			0.62m DACITE coarse grained, porphyritic, massive, orange-brown, low strength, highly weathered, moderately fractured, no odour, iron staining particularly in fractures	D				BEDROCK
							1.06m becoming medium strength, highly weathered, moderately fractured					
				1.5 594.0			1.26m EXCAVATION TP09 TERMINATED AT 1.26 m Refusal					
				2.0 594.5								
				2.5 595.0								
				3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP10

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690692.000, N: 6090236.000 (56 MGA94)
SURFACE ELEVATION : 596.420 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP10-0.0 (0.0-0.2)	596.5 / 0.0		ML	SILT low plasticity, dark brown, with coarse, <20 mm gravel, with grass rootlets, no odour, no staining	D	St		100 200 300 400	TOPSOIL 0.20: HP In-situ =150 - 225 kPa
			0.40m TP10-0.5 (0.4-0.6)	0.39m		CL	Silty CLAY low plasticity, light orange brown, no odour, no staining		VSt			FILL 0.45: HP In-situ =325 - 450 kPa
			0.90m TP10-1.0 (0.9-1.1)	597.0 / 0.5 597.5 / 1.0		CI	CLAY medium plasticity, light orange brown speckled black, trace sand, no odour, no staining		H Fb			0.85: HP In-situ =450 - >450 kPa
				1.58m 598.0 / 1.5			EXCAVATION TP10 TERMINATED AT 1.58 m Refusal					
				598.5 / 2.0 599.0 / 2.5 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP11

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690360.000, N: 6090237.000 (56 MGA94)
SURFACE ELEVATION : 584.110 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETRO-METER Blows/150mm	HAND PENETRO-METER kPa	STRUCTURE & Other Observations
			TP11-0.0 (0.0-0.2)	584.5 0.0		ML	Clayey SILT low plasticity, red-brown, with grass rootlets, no odour, no staining		VSt			TOPSOIL
				0.21m			SILTSTONE fine grained, layered, orange brown, low strength, highly weathered, highly fractured, no odour, iron staining in fractures					BEDROCK
			0.40m TP11-0.5 (0.4-0.6)	0.5				D				
				0.60m			becoming medium strength, slightly weathered, highly fractured					0.78: Ripper from 0.78
			1.00m TP11-1.0 (1.0-1.2)	585.0 1.0								
				1.12m			EXCAVATION TP11 TERMINATED AT 1.12 m Refusal					
				585.5 1.5								
				586.0 2.0								
				586.5 2.5								
				587.0 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP12

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690156.000, N: 6090337.000 (56 MGA94)
SURFACE ELEVATION : 585.070 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER kPa 100 200 300 400	STRUCTURE & Other Observations
			TP12-0. (0.0-0.2)	0.0		ML	Sandy SILT low plasticity, dark brown, well graded sand, no odour, no staining	D to M	F			TOPSOIL 0.15: HP In-situ =0 kPa
			0.40m TP12-0.5 (0.4-0.6)	0.31m 585.5 0.5		ML	Gravelly SILT to 400 mm, low plasticity, dark red-brown, well graded, sub-angular gravel, with cobbles, with boulders, no odour, no staining		F			FILL 0.45: HP In-situ =300 kPa
				0.60m 586.0 1.0			SILTSTONE fine grained, layered, orange brown, low strength, highly weathered, highly fractured, no odour, iron staining, particularly in fractures	D				BEDROCK 0.60: Bitumen observed BEDROCK
				1.20m 586.5 1.5			EXCAVATION TP12 TERMINATED AT 1.20 m Refusal					1.20: Note: Sample location likely to recieve wash from surrounding area
				587.0 2.0								
				587.5 2.5								
				588.0 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP13

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690045.000, N: 6090415.000 (56 MGA94)
SURFACE ELEVATION : 583.820 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP13-0.0 (0.0-0.2)	0.0 584.0		ML	SILT low plasticity, brown, with clay, with grass rootlets, no odour, no staining	D	F		100 200 300 400	TOPSOIL 0.15: HP In-situ =50 - 375 kPa
			0.40m TP13-0.5 (0.4-0.6)	0.32m 0.5		CL	CLAY low plasticity, red-brown, with sand, with gravel, no odour, no staining		H			RESIDUAL SOIL 0.55: HP In-situ =425 - >450 kPa
			0.80m TP13-1.0 (0.8-1.0)	0.69m 584.5 1.0 585.0			SILTSTONE fine grained, amorphous, layered, grey weathered orange, high strength, fresh, moderately weathered, no odour, iron staining in fractures					BEDROCK
				1.30m 1.5 585.5 2.0 586.0 2.5 586.5 3.0			EXCAVATION TP13 TERMINATED AT 1.30 m Refusal					

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP14

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690044.000, N: 6090417.000 (56 MGA94)
SURFACE ELEVATION : 597.420 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER kPa 100 200 300 400	STRUCTURE & Other Observations
			TP14-0.0 (0.0-0.2)	597.5		ML	Clayey SILT low plasticity, dark brown, with grass rootlets, no odour, no staining	D to M	St			TOPSOIL
				0.25m								
			0.40m TP14-0.5 (0.4-0.6)	598.0		CL	Silty CLAY low plasticity, red brown, no odour, no staining		St			FILL 0.50: HP In-situ =125 - 350 kPa
			0.80m TP14-1.0 (0.8-1.0)	598.5		SW	Gravelly SAND orange brown, fine to coarse grained, well graded, sub-rounded gravel, no odour, iron staining		VSt VD			RESIDUAL SOIL 1.00: HP In-situ =300 - >450 kPa
				1.15m			DACITE coarse grained, porphyritic, massive, orange brown, very low strength, highly weathered, no odour, iron staining					BEDROCK
				1.35m			EXCAVATION TP14 TERMINATED AT 1.35 m Refusal					
				599.0								
				599.5								
				600.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP15

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690003.000, N: 6090627.000 (56 MGA94)
SURFACE ELEVATION : 595.880 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			QC103 QC104 TP15-0.0 (0.0-0.2)	0.0 596.0		ML	SILT low plasticity, dark brown, with sand, with medium grained, sub-angular gravel, with grass rootlets and bricks, no odour, no staining	D	F		100 200 300 400	TOPSOIL 0.15: HP In-situ =75 - 400 kPa
				0.20m			SILT low plasticity, red-brown, with clay, with glass and charcoal, no odour, iron staining					FILL
			0.40m TP15-05 (0.4-0.6)	0.5 596.5		ML						0.60: HP In-situ =375 - >450 kPa
			0.80m TP15-1.0 (0.8-1.0)	1.0								
				1.00m			Silty CLAY low plasticity, orange mottled black, with sand, no odour, iron staining	D to M	H			RESIDUAL SOIL
			1.80m TP15-2.0 (1.8-2.0)	1.5 597.0 597.5		CL						
				1.90m			SILTSTONE fine grained, amorphous, layered, grey, low strength, moderately weathered, moderately fractured, no odour, iron staining in fractures					BEDROCK
				2.0 598.0			EXCAVATION TP15 TERMINATED AT 2.00 m Refusal					
				2.5 598.5								
				3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP16

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690023.000, N: 6090573.000 (56 MGA94)
SURFACE ELEVATION : 593.710 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP16-0.0 (0.0-0.2)	0.0			Silty GRAVEL coarse grained, well graded, sub-angular, dark brown, with cobbles, no odour, iron staining in gravel		VD			TOPSOIL 0.15: HP In-situ =175 kPa
			0.40m TP16-0.5 (0.4-0.6)	0.30m 594.0 0.5		GW	Gravelly CLAY low plasticity, red-brown, natural sandstone, medium grained, subrounded gravel, with sand, no odour, iron staining in gravel	D to M	VSt			RESIDUAL SOIL 0.40: HP In-situ =300 - >450 kPa 0.60: HP In-situ =450 - >450 kPa
			0.75m TP16-1.0 (0.8-1.0)	0.75m 594.5 1.0		CL	SANDSTONE medium to coarse grained, massive, red/orange brown, very low strength, extremely weathered, no odour, iron staining along fractures					BEDROCK
				1.15m 595.0 1.5			EXCAVATION TP16 TERMINATED AT 1.15 m Refusal					
				595.5 2.0								
				596.0 2.5								
				596.5 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP17

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690130.000, N: 6090548.000 (56 MGA94)
SURFACE ELEVATION : 591.270 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 9/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			QC102 TP17-0.0 (0.0-0.2)	591.5 / 0.0		CL	Sandy CLAY low to medium plasticity, orange brown, with coarse, to 15 mm, well graded gravel, with grass rootlets, with bitumen and glass, no odour, no staining					TOPSOIL
				0.20m								
			0.40m TP17-0.5 (0.4-0.6)	591.5 / 0.5		CL	Sandy CLAY coarse, to 15 mm, well graded, low to medium plasticity, orange brown, with gravel, with bitumen and glass, no odour, no staining		H			FILL 0.25: HP In-situ =425 - >450 kPa
				0.50m								
			0.80m TP17-1.0 (0.8-1.0)	592.0 / 1.0			SILTSTONE fine grained, layered, grey weathered orange, very low strength, highly weathered, highly fractured, interspersed with fresh, grey, high strength shale corestones ~500 mm in diameter from ~ 0.6 m., no odour, iron staining in fractures	D				BEDROCK
				592.5 / 1.5								
				1.70m								
				593.0 / 2.0			EXCAVATION TP17 TERMINATED AT 1.70 m Refusal					
				593.5 / 2.5								
				594.0 / 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP18

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690328.000, N: 6090431.000 (56 MGA94)
SURFACE ELEVATION : 596.560 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 10/9/13
LOGGED BY : Kara
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP18-0.0 (0.0-0.1)	0.0		SW	Clayey SAND medium grained, well graded, dark brown, trace gravel, with grass rootlets, no odour, no staining		MD			TOPSOIL 0.20: HP In-situ =200 - 275 kPa
			0.40m TP18-0.5 (0.4-0.6)	597.0 0.5		CI	0.34m CLAY medium plasticity, red brown, trace gravel, no odour, no staining		St			RESIDUAL SOIL 0.45: HP In-situ =175 - 375 kPa
							0.54m SILTSTONE fine grained, layered, orange mottled grey and red, extremely low strength, extremely weathered, highly fractured, no odour, iron staining particularly in fractures	D to M				BEDROCK 0.70: HP In-situ =350 - >475 kPa
							0.88m 0.95m becoming grey weathered orange, very low strength, highly weathered, moderately fractured					
			1.00m TP18-1.0 (1.0-1.2)	597.5 1.0			becoming medium strength, slightly weathered, moderately fractured					
							1.37m EXCAVATION TP18 TERMINATED AT 1.37 m Refusal					
				598.0 1.5								
				598.5 2.0								
				599.0 2.5								
				599.5 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP19

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 689935.000, N: 6090722.000 (56 MGA94)
SURFACE ELEVATION : 589.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER 100 200 300 400 kPa	STRUCTURE & Other Observations
			TP19-0.0 (0.0-0.2)	589.0	0.0		CL	CLAY low plasticity, dark brown, with silt, with grass rootlets, no odour, no staining	D to M	F			TOPSOIL 0.00: ACM Fragments observed in vicinity TOPSOIL
					0.18m								
			0.30m TP19-0.3 (0.3-0.5)				CI	CLAY medium plasticity, orange brown mottled grey, trace sand, trace well graded, sub-angular gravel, no odour, no staining	M	VSt			RESIDUAL SOIL
			0.50m TP19-1.0 (0.8-1.0)	589.5	0.5								0.50: HP In-situ =325 - >450 kPa 0.60: Decomposed organic matter observed - possible tree root
					0.79m								
								DACITE coarse grained, porphyritic, massive, orange brown mottled red, extremely low strength, extremely weathered, no odour, iron staining					BEDROCK
					0.98m								
				590.0	1.0			becoming low strength, highly weathered					
					1.10m								
								EXCAVATION TP19 TERMINATED AT 1.10 m Refusal					
				590.5	1.5								
				591.0	2.0								
				591.5	2.5								
				592.0	3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP20

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690043.000, N: 6090659.000 (56 MGA94)
SURFACE ELEVATION : 583.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / E / F / H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER 100 200 300 400 kPa	STRUCTURE & Other Observations
			TP20-0.0 (0.0-0.2)	583.0 0.0		GP	0.05m GRAVEL medium to coarse grained, to 20 mm, poorly graded, angular, grey, DGB, well compacted gravel sealed carpark, no odour, no staining		D			FILL
						Cl	CLAY medium plasticity, light brown, with coarse, to 20 mm, well graded, angular, shale and brick gravel, with bitumen and brick, no odour, no staining		St			
			0.40m TP20-0.5 (0.4-0.6)	583.5 0.5			0.27m SILTSTONE fine grained, amorphous, layered, grey weathered orange, low to medium strength, moderately weathered, highly fractured, no odour, iron staining in fractures 0.47m becoming medium to high strength, slightly weathered, moderately fractured	D				BEDROCK
			1.00m TP20-1.0 (1.0-1.2)	584.0 1.0			1.20m EXCAVATION TP20 TERMINATED AT 1.20 m Refusal					
				584.5 1.5								
				585.0 2.0								
				585.5 2.5								
				586.0 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP21

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690222.000, N: 6090766.000 (56 MGA94)
SURFACE ELEVATION : 588.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP21-0.0 (0.0-0.2)	588.0 0.0		ML	Gravelly SILT low plasticity, dark brown, coarse, to 20 mm, well graded, sub-angular gravel, with grass rootlets, with brick, no odour, no staining		S			TOPSOIL
				0.14m			Silty COBBLES coarse, to 400 mm, well graded, angular, red-brown, with boulders, combination of bricks, tiles, quarry refuse (shale), and white tuff fragments. Also ash, coal and bitumen observed, no odour, no staining	D	VL			FILL
			0.40m TP21-0.5 (0.4-0.6)	588.5 0.5								
			0.80m TP21-1.0 (0.8-1.0)	589.0 1.0								
				589.5 1.5								
				1.56m			EXCAVATION TP21 TERMINATED AT 1.56 m Collapse					
				590.0 2.0								
				590.5 2.5								
				591.0 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP22

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690128.000, N: 6090800.000 (56 MGA94)
SURFACE ELEVATION : 586.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION (E, F, H)	SUPPORT	GROUNDWATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP22-0.0 (0.0-0.2)	586.0	0.0		CL	Sandy CLAY low plasticity, brown, with metal, with grass rootlets, no odour, no staining	D	St			TOPSOIL
					0.19m		SW	Gravelly SAND brown, medium grained, well graded, angular shale gravel, with clay, with ash and bitumen, no odour, no staining	D to M	MD			FILL
			0.40m QC113 TP22-0.5 (0.4-0.6)	586.5	0.5		GW	Sandy GRAVEL medium grained, well graded, angular, grey speckled white, with ash and bitumen, no odour, no staining				0.45: HP In-situ =350 - >450 kPa	
					0.54m		CL	Sandy CLAY low plasticity, brown mottled red, with ash, bitumen and bricks, no odour, no staining	M	VSt		0.75: HP In-situ >450 kPa	
			0.80m TP22-1.0 (0.8-1.0)	587.0	1.0								
					1.25m								
					1.30m			SILTSTONE fine grained, amorphous, layered, grey, high strength, slightly weathered, moderately fractured, no odour, iron staining in fractures					BEDROCK
				587.5	1.5			EXCAVATION TP22 TERMINATED AT 1.30 m Refusal					
				588.0	2.0								
				588.5	2.5								
				589.0	3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP23

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690166.000, N: 6090733.000 (56 MGA94)
SURFACE ELEVATION : 605.500 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP23-0.0 (0.0-0.2)	605.5 / 0.0		ML	Sandy SILT low plasticity, brown, with grass rootlets, with brick, no odour, no staining		St		0.15: HP In-situ =375 - 450 kPa	TOPSOIL
			0.40m TP23-0.5 (0.4-0.6)	606.0 / 0.5			0.30m Sandy CLAY medium plasticity, brown, with coarse, to 300 mm, angular gravel, cobbles and boulders of fresh siltstone (quarry cuttings), brick, bitumen, no odour, no staining				0.50: HP In-situ =350 - 450 kPa	FILL
			0.80m TP23-1.0 (0.8-1.0)	606.5 / 1.0		CI		D	St			
			1.80m TP23-2.0 (1.8-2.0)	607.0 / 1.5			1.59m SILTSTONE fine grained, amorphous, layered, orange-brown, medium strength, slightly weathered, highly fractured, no odour, iron staining particularly in fractures					BEDROCK
				607.5 / 2.0			2.37m EXCAVATION TP23 TERMINATED AT 2.37 m Refusal					2.37: No ACM observed
				608.0 / 2.5								
				608.5 / 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP24

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690226.000, N: 6090726.000 (56 MGA94)
SURFACE ELEVATION : 597.500 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm	HAND PENETROMETER kPa	STRUCTURE & Other Observations
			TP24-0.0 (0.0-0.2)	597.5 0.0		ML	Sandy SILT low plasticity, brown, with grass rootlets, bitumen and bricks, no odour, no staining	D	St			TOPSOIL
				0.10m		CI	Gravelly CLAY medium plasticity, orange-brown, medium grained, to 200 mm, well graded, angular, possible DGB or quarry cuttings gravel, no odour, no staining	M	St			FILL
				0.30m		CL	Gravelly CLAY low plasticity, light grey, medium grained, shale, to 100 mm, well graded, sub-rounded gravel, possible quarry cuttings , no odour, no staining		F			
			0.40m TP24-0.5 (0.4-0.5)	0.40m								BEDROCK
				0.50m			SILTSTONE fine grained, amorphous, layered, dark grey, high strength, slightly weathered, moderately fractured, no odour, iron staining in fractures					
				598.0 0.5			EXCAVATION TP24 TERMINATED AT 0.50 m Refusal					
				598.5 1.0								
				599.0 1.5								
				599.5 2.0								
				600.0 2.5								
				600.5 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP25

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690255.000, N: 6090627.000 (56 MGA94)
SURFACE ELEVATION : 601.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER kPa 100 200 300 400	STRUCTURE & Other Observations
			TP25-0.0 (0.0-0.2)	601.0 0.0		Cl	0.10m CLAY medium plasticity, light brown, with coarse, well graded, angular gravel, with brick, glass and grass rootlets, no odour, no staining		St			TOPSOIL FILL
			0.50m TP25-0.5 (0.4-0.6)	601.5 0.5			Clayey COBBLES coarse, well graded, angular, light brown and grey, with fresh to slightly weathered shale boulders, some bricks and glass, no odour, no staining, reworked natural material, possible quarry cuttings					0.10: reworked natural material, possible quarry cuttings 0.30: metal pipe observed
			1.00m TP25-1.0 (0.8-1.0)	602.0 1.0				D	MD			
				602.5 1.5								
			2.00m TP25-2.0 (1.9-2.1)	603.0 2.0								2.00: rusted metal container - possibly old drum
				603.5 2.5								
			3.00m TP25-3.0 (2.8-3.0)	604.0 3.0			3.00m EXCAVATION TP25 TERMINATED AT 3.10 m Machine Limit					3.00: bitumen and ash observed
				604.5 3.5								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP26

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690222.000, N: 6090766.000 (56 MGA94)
SURFACE ELEVATION : 588.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm (2.5, 5.0, 7.5, 10.0, 12.5, 15.0, 17.5, 20.0, 22.5)	HAND PENETROMETER kPa (100, 200, 300, 400)	STRUCTURE & Other Observations
			TP26-0.0 (0.0-0.2)	588.0 0.0		ML	SILT low plasticity, dark brown, with sand, with glass, grass rootlets, no odour, no staining		St			TOPSOIL
			0.40m QC110 TP26-0.5 (0.4-0.6)	0.34m			COBBLES coarse, to 250 mm, poorly graded, angular, red-brown, whole bricks , with metal, ash, bitumen, no odour, no staining		MD			FILL
			0.80m TP26-1.0 (0.8-1.0)	588.5 0.5 0.56m		CI	CLAY medium plasticity, grey and brown, with silt, with bitumen, ash, no odour, no staining		St			
			1.80m TP26-2.0 (1.8-2.0)	589.0 1.0 1.10m			COBBLES coarse, to 250 mm, poorly graded, angular, red-brown, whole bricks , metal, ash, bitumen, no odour, no staining	D	L			2.00: Metal engine part observed
			2.80m TP26-3.0 (2.8-3.0)	589.5 1.5 590.0 2.0 590.5 2.5 3.00m								
				591.0 3.0			EXCAVATION TP26 TERMINATED AT 3.00 m Collapse					
				591.5 3.5								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP27

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690250.000, N: 6090914.000 (56 MGA94)
SURFACE ELEVATION : 594.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER 100 200 300 400 kPa	STRUCTURE & Other Observations
			TP27-0.0 (0.0-0.7)	594.0 0.0		CL	Gravelly CLAY low plasticity, dark brown, coarse, angular gravel, with grass rootlets, no odour, no staining	D	St		0.15: HP In-situ =200 - >450 kPa	TOPSOIL
			0.40m TP27-0.5 (0.4-0.6)	594.5 0.5			0.28m COBBLES coarse, to 300 mm, well graded, angular, grey, with shale boulders, reworked natural material - probably quarry cuttings, overlying fine grained, fresh, high strength natural outcrops, no odour, no staining		L			FILL
			0.80m TP27-1.0 (0.8-1.0)	595.0 1.0			1.05m fill ending at 1.05 m, becoming unworked siltstone - high strength, fresh, moderately fractured					BEDROCK
				595.5 1.5			1.30m EXCAVATION TP27 TERMINATED AT 1.30 m Refusal					
				596.0 2.0								
				596.5 2.5								
				597.0 3.0								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP28

PROJECT : Old Canberra Brickworks
LOCATION : Yarralumla ACT
CLIENT : Land Development Agency
FEATURE : Geotechnical
FILE / JOB NO : 3002369
SHEET : 1 OF 1

POSITION : E: 690321.000, N: 6090751.000 (56 MGA94)
SURFACE ELEVATION : 597.000 (AHD)

EQUIPMENT TYPE : 8-tonne Excavator
METHOD : Test Pit

DATE EXCAVATED : 11/9/13
LOGGED BY : Claudia Rodriquez
CHECKED BY :

EXCAVATION DIMENSIONS : 2.00 m LONG 0.60 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DYNAMIC CONE PENETROMETER Blows/150mm 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5	HAND PENETROMETER 100 200 300 400 kPa	STRUCTURE & Other Observations
			TP28-0.0 (0.0-0.2)	597.0 0.0		CI	0.10m Gravelly CLAY medium plasticity, dark brown, medium grained, well sorted, angular gravel, with sand, with brick, glass, bitumen, and grass rootlets, no odour, no staining		St			TOPSOIL
			0.40m TP28-0.5 (0.4-0.6)	597.5 0.5			Clayey COBBLES coarse, to 250 mm, poorly graded, angular, red-brown, whole brick fill , with sand, with glass and bitumen, no odour, no staining	D	L			FILL
				598.0 1.0								
				598.5 1.5								
				599.0 2.0								
				599.5 2.5								
				600.0 3.0			3.00m EXCAVATION TP28 TERMINATED AT 3.00 m Collapse					
				600.5 3.5								

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC AUSTRALIA

APPENDIX K: FIELD AND LABORATORY QAQC SUMMARY

QUALITY ASSURANCE / QUALITY CONTROL

QA/QC Objectives

The objective of the quality assurance / quality control program was to ensure representativeness, reliability, completeness and comparability of all data and conclusions obtained during the project. To achieve this objective, comprehensive QA/QC procedures were integrated into the sampling and analytical program.

The procedures included:

- decontamination, sample preparation and handling in accordance with best practice, Australian Standards and documented procedures during field work;
- use of experienced personnel and supervision by senior staff;
- collection and analysis of QC samples;
- use of NATA accredited laboratories and methods for all analyses undertaken; and
- internal laboratory QA/QC program.

Field QA/QC

Field Staff

The soil sampling component of the PSI was completed by John O'Brien a suitably qualified SMEC Environmental Scientist.

Field QAQC Documentation

All samples, including QA/QC samples, were transported to the laboratories with relevant chain of custody (CoC) documentation. The CoC detailed the following information:

- Site identification;
- Sampler(s);
- Nature of the sample – Soil, water or sediment;
- Collection time and date;
- Analyses to be performed; and
- Sample preservation method.

Field Quality Control Samples

Field Replicates

Field replicated soil samples were collected from the same conditions as the primary sample (location, depth and strata) by splitting equal portions of soil into laboratory prepared sample jars.

The purpose of Intra-laboratory (Duplicate) field samples is to estimate the variability of the sampling material. Inter-laboratory (Triplicate) field duplicate samples are also collected and submitted to a secondary laboratory as a means to assess the accuracy of the primary laboratory. Duplicate samples were labelled to conceal their relationship to the primary sample. The sample plan required the rate of

collected and analysed replicates (both duplicate and triplicate) to be 1:20 in accordance with the NEPM (amended 2013) requirements.

The rate of replicate sample analysis is summarised below in Table 1:

Table 1 Replicate sample analysis

COC	No. Primary Samples	Duplicate Rate	Triplicate Rate
Asbestos	19	1 (1:19)	0
TPH	18	2 (1:9)	2 (1:9)
BTEX	18	2 (1:9)	2 (1:9)
PAH/Phenols	18	2 (1:9)	2 (1:9)
Metals	34	2 (1:12)	2 (1:12)
Explosive Suite	1	0	0
OCP/OPP	25	1 (1:25)	1 (1:25)
PCB	10	1 (1:10)	1 (1:10)

With the exception of asbestos and the explosive suite analysis the replicate rate of analysis met the required rate of 1:20 and are suitable for the purpose of the PSI

Field and Trip Blanks

Field prepared blanks were collected daily (QC101, QC105 and QC109), the purpose of the blanks were to assess the potential for cross contamination during sampling and holding in the field. Field prepared blanks were placed in esky utilised for each day of sampling.

A single laboratory prepared Trip Blank was kept with the sample batch during sample collection and transport.

Concentrations of contaminates of concern were below the laboratory detection limit in both the trip and field blank samples indicating that contamination did not occur during sampling.

Tabulated results of the blanks are presented in Table 3 of **Appendix I**.

Trip Blanks

A laboratory prepared trip blank (Trip Blank) was supplied to accompany samples during collection and transport until receipt at the analysing laboratory on the 11 September 2013. Trip blanks were analysed for TPH C_6–C_9 and BTEX compounds.

Concentrations of TPH and BTEX were below the laboratory detection limit indicating that cross contamination did not occur during sampling and transport.

Tabulated results of the blank are presented in Table 3 of **Appendix I**.

Trip Spikes

A single laboratory trip spike (Trip Spike) sample was utilised during the investigation on the 11 September 2013. The sample accompanied the primary samples scheduled for volatile analysis which were collected on the same day.

The primary aim of these samples was to determine the possibility of loss of volatile components during the sampling and transport procedure.

The results for the soil field matrix spikes (between 70% and 93%) indicate that in general volatiles have not been lost during the sampling and transport.

Field Sampling Methods

Test Pits

Samples were collected directly from undisturbed bulk samples from the centre of excavator bucket to minimise the potential for cross contamination. A new pair of nitrile gloves was used at each sample depth and location. GPS coordinates for each test pit was recorded on SMEC field sheets; similarly the sample depth was measured (tape measure) and recorded.

Sub surface conditions were logged in accordance with the Unified Soil Classification System (USCS); test pit logs are included in **Appendix J**.

Sample Receipt, Handling, Storage and Transportation

All soil samples were placed in laboratory prepared and supplied jars, before being placed in ice filled eskies and then transported to the laboratories with accompanying CoC documentation (refer to **Appendix L** for CoC documentation and Sample Receipt Notification).

Chain of Custody documentation was signed and dated stating that:

- All samples were received cool and in good order;
- All samples were presented in adequate sample containers;
- All samples submitted for volatiles were correctly contained with no headspace; and
- All samples were labelled appropriately to current quality field sampling protocols.

Laboratory QA/QC Procedures

Laboratories and Accreditation

The primary laboratory SGS (NATA Accreditation No. 2562, site No. 4354) is NATA accredited and used NATA accredited testing procedures. The secondary laboratory Eurofins/MGT (NATA Accreditation No. 1261, site No. 18217) also used NATA accredited testing procedures.

Analytical Methods

The laboratory analytical methods were in accordance with NEPC APHA 20th and can be found in **Appendix L**. A summary of the laboratory analytical methods is provided below in Table 2.

Table 2 Laboratory Analytical Methods

PCOC	SGS Analytical Methods	MGT Analytical Methods
Asbestos	AS 4964-2004 (PLM, DS)	-
As, Cd, Cr, Cu, Ni, Pb, Zn	APHA 20th 3120-USEPA 6010C/APHA 21st 3120B	E022 Acid Extractable metals in Soils
Mercury	APHA 21st 3120B	E026 Acid Extractable metals in Soils Mercury
PCB	USEPA 8081/8082	GC-ECD E013.1 and E013.2
TPH C6-C9	USEPA 5030B/8260B	GC-MS techniques using in-house MGT 100A
TPH C10-C36	USEPA SW846-8015A	GC-FID using in-house LTM-ORG-2010
BTEX	USEPA 5030B/8260B	In house E029/E016
PAH	USEPA SW846-8270B	GC-MS in house
OCP	USEPA 8081/8082	GC-MS using in-house E013.1, E013.2, E014.1, E014.2, E017.1 and E017.2

Holding Times

The time lapse between sample collection and analyte extraction was kept minimal to reduce any biological, chemical or physical alteration of the analyte. NEPC (1999) prescribe recommended holding times for which a valid analytical results can be extracted. The relevant holding times for analytes applicable to the PSI are summarised below in Table 3.

Table 3 Recommend Holding Times

Analyte	Matrix	Recommended Holding Time
Asbestos	Soil	N/A
Metals (As,Cd, Cr, Cu, Ni, Pb, Zn	Soil	6 Months
	Water	
Mercury	Soil	28 Days
	Water	
TPH	Soil	14 days
	Water	7 Days
BTEX, VOC	Soil	14 days
	Water	

PAH	Soil	14 days
	Water	7 Days
OCP, OPP, PCB	Soil	14 days
	Water	7 Days

SMEC completed a review of sample receipt notification and chain of custody documentation for the PSI. No holding time exceedances were reported.

Internal Laboratory Control Measures

To assess the accuracy of laboratory analysis the primary laboratory implemented the control measures detailed in Table 4.

Table 4 Laboratory Control Measures

QC Sample	Definition	Objective	Frequency	Acceptable Range
Laboratory Control Spike	Certified reference material.	To quality check laboratory preparation techniques.	1 per analytical batch per analytical method.	70-130% Recovery
Batch Duplicate	An intra-laboratory duplicate sample randomly selected from the sample batch.	To measure the precision in a given sample matrix.	1 every 10 samples per analytical method per matrix.	RPD < 50%

The acceptance targets for laboratory control samples and matrix spikes etc. is generally defined independently by each laboratory. The acceptance criteria used is that 80% of the precision and accuracy must fall within the laboratory control limits. Based on this the acceptance targets generally range between 60% and 130% recovery.

The laboratory internal standards, calibration blanks and mid-range calibration verifications were within acceptable range.

Laboratory QA/QC Results

Laboratory QC analytical results are summarised below:

- The percentage recovery for spiked samples calculated by the laboratory was within the acceptance limits for the methods used, for the majority of the analytes, for each of the testing laboratories;
- Percentage recovery results for laboratory control samples and surrogates were within acceptance limits for the majority of samples and exhibit a high percentage recovery;
- The laboratory internal standards, calibration blanks and mid-range calibration verifications were all within the acceptable range.
- The Interpretive Quality Control Reports for each laboratory are presented in Appendix H
- Laboratory blanks throughout the validation program were reported within the acceptance criteria, with no target analytes detected in any of the analysis blanks; and
- All samples were analysed within the prescribed holding time for each analyte (refer to **Appendix L** – Laboratory Reports).

Completeness

The following documentation has been included to demonstrate the completeness of valid measurements compared to the total number of measurements made:

- Chain of Custody forms;
- Sample receipt forms;
- All sample results reported;
- All laboratory duplicates reported and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike (MS) data reported;
- Spike recovery acceptable limits reported; and
- National Association of Testing Authorities (NATA) stamp on reports.

This ensures the confident use of the collected data for site assessment.

Accuracy

Accuracy is the level of agreement between an experimental determination and the true value of the parameter being measured. Reference samples of matrix spikes were used to determine the accuracy of the analytical technique. The percentage recovery for spiked samples, calculated by the laboratory, is within the acceptance limits for the methods used [±30%]. Details are provided in the laboratory reports included within **Appendix L**.

SMEC considers that the laboratory results reported represents the true values of contaminants in situ and that bias has not been introduced:

- By chemicals during handling or transport;
- From contaminated equipment;
- From contaminated reagents; and
- During laboratory preparation and analysis.

Precision

Replicates from duplicate analyses are used to determine the precision or reproducibility of results. Precision is normally measured as the RPD between samples. The RPD should be within the recommended range of ±50%.

Variation from the recommended range up to predefined control limits is considered acceptable. Data precision control limits adopted for the PSI is as follows:

Replicate RPDs:

- Should not exceed 50 %RPD at concentration levels greater than ten times the practical quantization limit (PQL) / estimated quantization limit (EQL) / limit of reporting (LOR).
- Should not exceed 75 %RPD at concentrations between five to ten times the PQL/ EQL/ LOR.

- Should not exceed 100 %RPD at concentration levels less than two times the PQL/ EQL/ LOR.

These Control Limits allow for higher RPDs between results of low absolute value (in comparison to LORs).

The RPD results of replicated samples generally met recommended range of ±50%.with the exception of:

- TP28-0.5/QC111: RPDs for cobalt (44%), copper (75%) and nickel (59%);
- TP21-1.0/QC112: RPD for lead (31%);
- TP26-0.5/QC110: RPD for cobalt (57%), copper (67%), manganese (78%), nickel (67%) and zinc (47); and
- TP22-0.5/QC113: RPD for lead (34%).

The exceedances were attributed to sample heterogeneity of fill material sampled, it is noted that all detected concentrations were below the adopted assessment criteria.

SMEC considers that sufficient field and laboratory duplicates have been collected to provide a quantitative assessment of variability (or reproducibility) of data.

Sensitivity

The method detection limit is a measure of how sensitively the analytical technique / measurement quantify the concentration of the compound present. The detection limits achieved by the laboratories should be within criteria for each compound analysed. Therefore, sufficient confidence can be placed in the results obtained. The sensitivity is described as the Estimated Quantitation Limit (EQL), which is typically between 2 and 5 times the method detection limit.

Holding Times

The time between the field sampling and analyte result was as short as practicable in order to prevent any biological, chemical or physical alteration of the analyte. All samples were analysed within the prescribed holding time for each analyte (**Appendix L**).

Representativeness

Representativeness indicates how accurately and precisely the collected data represents the characteristics of a population, parameter variations at a sampling point or an environmental condition. SMEC consider that the samples collected were representative of the environmental media targeted during sampling.

QA/QC Decision Error Limits

For the purposes of this investigation, an overall error limit of 95% (i.e. 5% outside acceptable limits) was adopted in line with industry standards.

Summary QA/QC Assessment

A total population of 35 soil samples were analysed for contaminants of concern for soils. A total of two (2) duplicate samples were analysed by the primary laboratory (SGS) which is within the target

ratio of 1:20. A total of two (2) triplicate samples were sent to the inter-laboratory (eurofins|mgt), which is within the target ratio of 1:20.

The reported results indicate that the accuracy and precision of the analysis was satisfactory and constitute an appropriate reflection of in-situ concentrations for soil and are thus suitable to form an adequate basis for the assessment of site conditions.

APPENDIX L: LABORATORY CERTIFICATES

SMEC

CHAIN OF CUSTODY FORM

1/10

SMEC OFFICE: Canberra	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT		LAB: SGS Australia
PROJECT: OCB	☐ Non Standard TAT (List due date):		ATTENTION:
PROJECT NUMBER: 3002369	LAB QUOTE NO: ENV1-2A568E	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 Maddox St
PROJECT MANAGER: Nathalie O'toole	CONTACT PH: 6234 1967	COC: (1) 2 3 4 5 6 7	Alexandria NSW 2015
SAMPLED BY: John O'Brien		OF: 1 2 3 4 5 6 7	
DATE SAMPLED:	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): John.O'b...@smec.com	DATE/TIME: 11/9/2013	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if blank): As above			

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	13 Metals NEPM	OCP/OPP				
	TP01-0.0	10/9/13	S	JAR	1				X	X				
	TP01-0.5	10/9/13	S	"	1	X								
	TP01-1.0	10/9/13	S	"	1	X								
	TP02-0.0	10/9/13	"	"	1				X	X				
	TP02-0.5	10/9/13	"	"	1	X								
	TP02-1.0	10/9/13	"	"	1	X								
	TP02-1.3	10/9/13	"	"	1	X								
	TP02-2.0	10/9/13	"	"	1	X								
	TP03-0.0	10/9/13	"	"	1				X	X				
	TP03-0.5	10/9/13	"	"	1	X								
	TP03-1.0	10/9/13	"	"	1	X								
				TOTAL	11	8			3	3				

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

SMEC

CHAIN OF CUSTODY FORM

2/10

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: OCB			ATTENTION:
PROJECT NUMBER: 3002369	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle) COC: 1 (2) 3 4 5 6 7 OF: 1 2 3 4 5 6 7	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST. ALEXANDRIA NSW 2015
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 62341967		
SAMPLED BY: JOHN O'BRIEN			
DATE SAMPLED: Nathalie.O'Toole@Smec.com	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): John.OBrien@SMEC.com	DATE/TIME:	DATE/TIME:	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	13 Metals NEPM	OCP/OPP				
	TP03-2.0	10/9/13	S	JAR	1	X								
	TP04-0.0	10/9/13	"	"	1				X	X				
	TP04-0.5	10/9/13	"	"	1	X								
	TP05-0.0	9/9/13	"	"	1				X	X				
	TP05-0.5	9/9/13	"	"	1	X								
	TP05-1.0	9/9/13	"	"	1	X								
	TP06-0.0	9/9/13	"	"	1				X	X				
	TP06-0.5	9/9/13	"	"	1	X								
	TP06-1.0	9/9/13	"	"	1	X								
	TP06-1.7	9/9/13	"	"	1	X								
	TP07-0.0	9/9/13	"	"	1				X	X				
					TOTAL 11	7			4	4				

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

0306

CHAIN OF CUSTODY FORM

3/10

SMEC

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: OCB			ATTENTION:
PROJECT NUMBER: 3002309	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle) COC: 1 2 (3) 4 5 6 7	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 6234 1967	OF: 1 2 3 4 5 6 7	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN			
DATE SAMPLED: Nathalie.O'Toole@smec.com	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): John.O'Brien@smec.com	DATE/TIME:	DATE/TIME:	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	OCP/OPP	13 metals NEPM				
	TP07-0.5	9/9/13	S	JAR	1	X								
	TP07-1.0	↓	↓	↓	1	X								
	TP07-1.9				1	X								
	TP08-0.0				1				X	X				
	TP08-0.5				1	X								
	TP08-1.0				1	X								
	TP08-1.5	↓			1	X								
	TP09-0.0	10/9/13			1				X	X				
	TP09-0.5	10/9/13			1	X								
	TP09-1.0	10/9/13			1	X								
	TP10-0.0	10/9/2013	↓	↓	1				X	X				
				TOTAL	11	8			3	3				

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

0307

CHAIN OF CUSTODY FORM

4/10

SMEC

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: CCB			ATTENTION:
PROJECT NUMBER: 30025669	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 62341907	COC: 1 2 3 (4) 5 6 7	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	
DATE SAMPLED: Nathalie.O'Toole@SMEC.com	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): ..OBrien@SMEC.com	DATE/TIME: 10/9/13	DATE/TIME:	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Holq	TRH	BTEX	OCP/OP?	13 Metals Nepm	Asbestos			
	TP10 – 0.5	10/9/2013	S	JAR	1	X								
	TP10 – 1.0				1	X								
	TP11 – 0.0				1				X	X				
	TP11 – 0.5				1	X								
	TP11 – 1.0				1	X								
	TP12 – 0.0				1				X	X	X			
	TP12 – 0.5				1	X								
	TP13 – 0.0				1				X	X				
	TP13 – 0.5				1	X								
	TP13 – 1.0				1	X								
	TP14 – 0.0	9/9/13			1				X	X				
				TOTAL	11	7			4	4	1			

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

CHAIN OF CUSTODY FORM

5/10

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT		LAB: SGS AUSTRALIA
PROJECT: OCB	☐ Non Standard TAT (List due date):		ATTENTION:
PROJECT NUMBER: 30023609	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.):
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 62341967	COC: 1 2 3 4 (5) 6 7	16/33 MADDOX ST.
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	ALEXANDRIA NSW 2015
DATE SAMPLED: Nathalie.OToole@SMEC.com	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): John.OBrien@SMEC.com	DATE/TIME:	DATE/TIME:	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Halo	TRH	BTEX	~~8~~ 13 metals NEPM	PAH	Asbestos			
	TP 14 - 0.5	9/9/2013	S	JAR	1	X								
	TP 14 - 1.0				1	X								
	TP 15 - 0.0				1		X	X	X	X	X			
	TP 15 - 0.5				1	X								
	TP 15 - 1.0				1	X								
	TP 15 - 2.0				1	X								
	TP 16 - 0.0				1		X	X	X	X	X			
	TP 16 - 0.5				1	X								
	TP 16 - 1.0				1	X								
	TP 17 - 0.0				1		X	X	X	X	X			
	TP 17 - 0.5				1	X								
				TOTAL	11	8	3	3	3	3	3			

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

0309

CHAIN OF CUSTODY FORM

6/10

SMEC

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: OCB			ATTENTION:
PROJECT NUMBER: 30023369	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 02 84 19 07	COC: 1 2 3 4 5 (6) 7	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	
DATE SAMPLED: Nathalie.OToole@Smec.com	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): John.OBrien@Smec.com	DATE/TIME:	DATE/TIME:	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Asbestos	TRH	BTEX	OCP/OPP	13 Metals NEPM	PAH	Explosive Suite		
	TP17 -1.0	9/9/2013	S	JAR	1	X								
	TP18 -0.0	10/9/2013	|	|	1	|	|	|	X	X	|	|	|	
	TP18 -0.5	|	|	|	1	X	|	|	|	|	|	|	|	
	TP18 -1.0	|	|	|	1	X	|	|	|	|	|	|	|	
	TP19 -0.0	11/9/2013	|	|	1	|	X	X	|	|	X	X	|	
	TP19 -0.5	|	|	|	1	X	|	|	|	|	|	|	|	
	TP19 -1.0	|	|	|	1	X	|	|	|	|	|	|	|	
	TP21 -0.0	|	|	|	1	|	|	|	|	|	|	|	|	
	TP21 -0.5	|	|	|	1	|	X	X	|	X	X	|	|	
	TP21 -1.0	|	|	|	1	|	X	X	|	X	X	|	|	
	TP23 -0.0	↓	↓	↓	1	X	|	|	|	|	|	|	|	
				TOTAL	11	6	3	3	1	3	3	1		

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

CHAIN OF CUSTODY FORM

7/10

SMEC

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: OCB			ATTENTION:
PROJECT NUMBER: 3002369	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 6234 1967	COC: 1 2 3 4 5 6 (7)	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	
DATE SAMPLED: Nathalie.OToole@Smec.com	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): John.OBrien@SMEC.com	DATE/TIME: 7/9/2013	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			
Special Laboratory Instructions:			

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	13 Metals NEPM	PAH	OCP/OP	PCB	Phenols	Asbestos	
	TP23 -0.5	11/9/2013	S	JAR	1		X	X	X	X	X	X	X	X	
	TP 23 -1.0				1	X									
	TP 23-2.0				1		X	X	X	X	X	X	X	X	
	TP 24 -0.0				1		X	X	X	X	X	X	X	X	
	TP 24 -0.5				1	X									
	TP 26 -0.0				1	X									
	TP 26 -0.5				1		X	X	X	X	X	X	X	X	
	TP 26 -1.0				1	X									
	TP 26 -2.0				1		X	X	X	X	X	X	X	X	
	TP 26 -3.0				1	X									
	TP 27 -0.0	↓	↓	↓	1		X	X	X	X	X	X	X	X	
				TOTAL	11	5	6	6	6	6	6	6	6	6	

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

CHAIN OF CUSTODY FORM

8/10

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT		LAB: SGS AUSTRALIA
PROJECT: OCB	☐ Non Standard TAT (List due date):		ATTENTION:
PROJECT NUMBER: 3002369	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 62341967	COC: 1 2 3 4 5 6 7	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	
DATE SAMPLED: Nathalie.O'Toole@SMEC.com	RELINQUISHED BY: John O'Brien	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): John.OBrien@SMEC.com	DATE/TIME: 11/9/2013	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED									COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	13 Metals NEPM	PAH	PCB	Phenols	OCP/OPP	Asbestos	
	TP27 - 0.5	11/9/2013	S	JAR	1	X									
	TP27 - 1.0				1	X									
	TP23 - 0.0				1	X									
	TP26 - 0.5				1		X	X	X	X	X	X	X	X	
	TP25 - 0.0				1	X									
	TP25 - 0.5				1		X	X	X	X	X	X	X	X	
	TP25 - 1.0				1	X									
	TP25 - 2.0				1		X	X	X	X	X	X	X	X	
	TP25 - 3.0				1	X									
	TP22 - 0.0				1	X									
	TP22 - 0.5	↓	↓	↓	1		X	X	X	X				X	
				TOTAL	11	7	4	4	4	4	3	3	3	5	

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

CHAIN OF CUSTODY FORM 9/10

SMEC

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: OCD			ATTENTION:
PROJECT NUMBER: 300369	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 10/33 MADDOX ST
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 6234 1967	COC: 1 2 3 4 5 6 7	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	
DATE SAMPLED: Nathalie.O'Toole@SMEC.com	RELINQUISHED BY: John O'Brien	RECEIVED BY:	RELINQUISHED BY:
Email reports to (will default to PM if blank): John.O'Brien@SMEC.com	DATE/TIME: 11/9/2013	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

RECEIVED BY:
DATE/TIME:

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED									COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	7/10/13	TRH	BTEX	~~HM~~ 13 Priority Metals	PAH	PCB	OCP/OPP	Phenols	Asbestos	
	TP22-1.0	11/9/2013	S	JAR	1		X	X	X	X				X	
	TP20-0.0				1				X					X	
	TP20-0.5				1				X						
	TP20-1.0				1	X									
	QC101	9/9/2013			4		X	X	X	X	X	X	X		
	QC102	9/9/2013			1	X									
	QC103	9/9/2013			1	X									
	QC104	9/9/2013			1	X									
	QC105	10/9/2013			4		X	X	X	X	X	X	X		
	QC106	10/9/2013			1	X									
	QC107	10/9/2013	↓	↓	1	X									
				TOTAL	~~17~~	6	3	3	5	3	2	2	2	2	

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

CHAIN OF CUSTODY FORM

10/10

SMEC

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard - 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: OCB			ATTENTION:
PROJECT NUMBER: 3009369	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: NATHALIE O'TOOLE	CONTACT PH: 6234 1967	COC: 1 2 3 4 5 6 7	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	
DATE SAMPLED: Nathalie.OToole@Smec.com	RELINQUISHED BY: John O'Brien	RECEIVED BY:	RELINQUISHED BY:
Email reports to (will default to PM if blank):	DATE/TIME: 11/9/2013	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			

Special Laboratory Instructions: * Please FWD QC110 + QC113 to Eurofins Sydney, Chilled Condition

SAMPLE DETAILS						ANALYSIS REQUIRED									COMMENTS		
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	PAH	PCB	13 metals Nepm	Phenols	OCP/OPP	Asbestos	TRH Criteria	Explosive Suite	
	QC 108	10/9/2013	S	JAR	1	X											
	QC 109	11/9/2013	W		4		X	X	X	X	X	X	X			X	
*	QC 110	11/9/2013			1		X	X	X	X	X	X	X	X			*
	QC 111	11/9/2013			1		X	X	X	X	X	X	X	X			
	QC 112	11/9/2013			1		X	X	X		X			X			
*	QC 113	11/9/2013			1		X	X	X		X			X			*
	Trip Blank	9/9/2013	W	Vial	2			X							X		
	Trip Spike	11/9/2013	S	Vial	1		X	X									
	TP2 -1-0	10/9/2013	S	Jar	1	X											
	TP28 -1-0	11/9/13	S	Jar	1	X											
	TP28 -2-0	11/9/13	S	Jar	1		X	X	X	X	X	X	X	X			
				TOTAL	16	3	7	8	6	4	6	4	4	5	1	1	

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

SAMPLE RECEIPT ADVICE

SE120709

CLIENT DETAILS

Contact	Nathalie O'Toole
Client	SMEC Australia Pty Ltd - ACT
Address	Sun Micro Building Suite 2, Level 1 243 Northbourne Avenue LYNEHAM ACT 2602
Telephone	02 6234 1900
Facsimile	02 6234 1966
Email	Nathalie.O'Toole@smec.com
Project	**3002369 - OCB**
Order Number	**0304--0313**
Samples	42

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 12/9/2013
Report Due	Thu 19/9/2013
SGS Reference	**SE120709**

SUBMISSION DETAILS

This is to confirm that 42 samples were received on Thursday 12/9/2013. Results are expected to be ready by Thursday 19/9/2013. Please quote SGS reference SE120709 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	38 Soils, 4 Waters	Type of documentation received	COC
Date documentation received	12/9/13@3:25pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

For Explosives results refer SGS SE120709A.
Trip Spike analysed for BTEX only.
A separate portion was not supplied for Asbestos analysis. A sub-sample will be used from the jar provided.
66x samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.

SAMPLE RECEIPT ADVICE

SE120709

CLIENT DETAILS

Client SMEC Australia Pty Ltd - ACT

Project 3002369 - OCB

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	TP01-0.0	28	13	-	-	-	-	-	-
002	TP02-0.0	28	13	-	-	-	-	-	-
003	TP03-0.0	28	13	-	-	-	-	-	-
004	TP04-0.0	28	13	-	-	-	-	-	-
005	TP05-0.0	28	13	-	-	-	-	-	-
006	TP06-0.0	28	13	-	-	-	-	-	-
007	TP07-0.0	28	13	-	-	-	-	-	-
008	TP08-0.0	28	13	-	-	-	-	-	-
009	TP09-0.0	28	13	-	-	-	-	-	-
010	TP10-0.0	28	13	-	-	-	-	-	-
011	TP11-0.0	28	13	-	-	-	-	-	-
012	TP12-0.0	28	13	-	-	-	-	-	-
013	TP13-0.0	28	13	-	-	-	-	-	-
014	TP14-0.0	28	13	-	-	-	-	-	-
015	TP15-0.0	-	-	23	-	-	9	12	8
016	TP16-0.0	-	-	23	-	-	9	12	8
017	TP17-0.0	-	-	23	-	-	9	12	8
018	TP18-0.0	28	13	-	-	-	-	-	-
019	TP19-0.0	-	-	23	-	-	9	12	8
020	TP21-0.5	-	-	23	-	-	9	12	8
021	TP21-1.0	-	-	23	-	-	9	12	8
022	TP23-0.5	28	13	23	11	1	9	12	8
023	TP23-2.0	28	13	23	11	1	9	12	8
024	TP24-0.0	28	13	23	11	1	9	12	8

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE120709

CLIENT DETAILS

Client SMEC Australia Pty Ltd - ACT

Project 3002369 - OCB

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
025	TP26-0.5	28	13	23	11	1	9	12	8
026	TP26-2.0	28	13	23	11	1	9	12	8
027	TP27-0.0	28	13	23	11	1	9	12	8
028	TP28-0.5	28	13	23	11	1	9	12	8
029	TP25-0.5	28	13	23	11	1	9	12	8
030	TP25-2.0	28	13	23	11	1	9	12	8
031	TP22-0.5	-	-	23	-	-	9	12	8
032	TP22-1.0	-	-	23	-	-	9	12	8
038	QC 111	28	13	23	11	1	9	12	8
039	QC 112	-	-	23	-	-	9	12	8
041	Trip Spike	-	-	-	-	-	-	12	-
042	TP28-2.0	28	13	23	11	1	9	12	8

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE120709

CLIENT DETAILS

Client SMEC Australia Pty Ltd - ACT

Project 3002369 - OCB

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Hexavalent Chromium in Soil UV/Vis	Mercury in Soil	Moisture Content	Total Recoverable Metals in Soil by ICPOES from
001	TP01-0.0	-	1	1	1	11
002	TP02-0.0	-	1	1	1	11
003	TP03-0.0	-	1	1	1	11
004	TP04-0.0	-	1	1	1	11
005	TP05-0.0	-	1	1	1	11
006	TP06-0.0	-	1	1	1	11
007	TP07-0.0	-	1	1	1	11
008	TP08-0.0	-	1	1	1	11
009	TP09-0.0	-	1	1	1	11
010	TP10-0.0	-	1	1	1	11
011	TP11-0.0	-	1	1	1	11
012	TP12-0.0	2	1	1	1	11
013	TP13-0.0	-	1	1	1	11
014	TP14-0.0	-	1	1	1	11
015	TP15-0.0	2	1	1	1	11
016	TP16-0.0	2	1	1	1	11
017	TP17-0.0	2	1	1	1	11
018	TP18-0.0	-	1	1	1	11
019	TP19-0.0	-	-	-	1	-
020	TP21-0.5	-	1	1	1	11
021	TP21-1.0	-	1	1	1	11
022	TP23-0.5	2	1	1	1	11
023	TP23-2.0	2	1	1	1	11
024	TP24-0.0	2	1	1	1	11

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE120709

CLIENT DETAILS

Client SMEC Australia Pty Ltd - ACT

Project 3002369 - OCB

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Hexavalent Chromium in Soil UV/Vis	Mercury in Soil	Moisture Content	Total Recoverable Metals in Soil by ICPOES from	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
025	TP26-0.5	2	1	1	1	11	-	-
026	TP26-2.0	2	1	1	1	11	-	-
027	TP27-0.0	2	1	1	1	11	-	-
028	TP28-0.5	2	1	1	1	11	-	-
029	TP25-0.5	2	1	1	1	11	-	-
030	TP25-2.0	2	1	1	1	11	-	-
031	TP22-0.5	2	1	1	1	11	-	-
032	TP22-1.0	2	1	1	1	11	-	-
033	TP20-0.0	2	1	1	1	11	-	-
034	TP20-0.5	-	1	1	1	11	-	-
035	QC 101	-	-	-	-	-	12	8
036	QC 105	-	-	-	-	-	12	8
037	QC 109	-	-	-	-	-	12	8
038	QC 111	2	1	1	1	11	-	-
039	QC 112	2	1	1	1	11	-	-
040	Trip Blank	-	-	-	-	-	12	8
042	TP28-2.0	2	1	1	1	11	-	-

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE120709

CLIENT DETAILS

Client SMEC Australia Pty Ltd - ACT

Project 3002369 - OCB

SUMMARY OF ANALYSIS

No.	Sample ID	Hexavalent Chromium in water by Discrete Analyser	Mercury (dissolved) in Water	OC Pesticides in Water	OP Pesticides in Water	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Water	Total Phenolics in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water
035	QC 101	1	1	28	13	22	11	1	11	9
036	QC 105	1	1	28	13	22	11	1	11	9
037	QC 109	1	1	28	13	22	11	1	11	9

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

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	Nathalie O'Toole
Client	SMEC Australia Pty Ltd - ACT
Address	Sun Micro Building Suite 2, Level 1 243 Northbourne Avenue LYNEHAM ACT 2602
Telephone	02 6234 1900
Facsimile	02 6234 1966
Email	Nathalie.O'Toole@smec.com
Project	**3002369 - OCB**
Order Number	**0304--0313**
Samples	42
Date Received	12/9/2013

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE120709 R0**
Report Number	0000065698
Date Reported	20/9/2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all samples using trace analysis technique.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ravee Sivasubramaniam
Asbestos Analyst

Sheila Lepasana
Senior Technician

Snezana Kostoska
2IC Inorganics Chemist

VOC's in Soil [AN433/AN434]

PARAMETER	UOM	LOR	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP19-0.0 SOIL 11/9/2013 SE120709.019	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.60	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%	-	74	74	93	76	71	71
d4-1,2-dichloroethane (Surrogate)	%	-	82	85	105	91	86	87
d8-toluene (Surrogate)	%	-	84	85	108	88	84	85
Bromofluorobenzene (Surrogate)	%	-	103	96	109	106	100	94

PARAMETER	UOM	LOR	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.60	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%	-	70	73	78	86	85	86
d4-1,2-dichloroethane (Surrogate)	%	-	80	91	95	107	105	106
d8-toluene (Surrogate)	%	-	80	90	93	101	102	103
Bromofluorobenzene (Surrogate)	%	-	92	104	97	116	109	111

PARAMETER	UOM	LOR	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031	TP22-1.0 SOIL 11/9/2013 SE120709.032	QC 111 SOIL 11/9/2013 SE120709.038
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.60	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%	-	79	80	77	77	77	90
d4-1,2-dichloroethane (Surrogate)	%	-	103	102	98	100	101	116
d8-toluene (Surrogate)	%	-	101	96	95	95	99	115
Bromofluorobenzene (Surrogate)	%	-	111	100	99	96	103	118

VOC's in Soil [AN433/AN434] (continued)

PARAMETER	UOM	LOR	QC 112 SOIL 11/9/2013 SE120709.039	Trip Spike SOIL 11/9/2013 SE120709.041	TP28-2.0 SOIL 11/9/2013 SE120709.042
Benzene	mg/kg	0.10	<0.1	[70%]	<0.1
Toluene	mg/kg	0.10	<0.1	[89%]	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	[89%]	<0.1
m/p-xylene	mg/kg	0.20	<0.2	[93%]	<0.2
o-xylene	mg/kg	0.10	<0.1	[93%]	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	-	<0.3
Total BTEX*	mg/kg	0.60	<0.6	-	<0.6
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%	-	82	80	71
d4-1,2-dichloroethane (Surrogate)	%	-	108	105	90
d8-toluene (Surrogate)	%	-	104	105	85
Bromofluorobenzene (Surrogate)	%	-	103	107	88

Volatile Petroleum Hydrocarbons in Soil [AN433/AN434/AN410]

PARAMETER	UOM	LOR	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP19-0.0 SOIL 11/9/2013 SE120709.019	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
Dibromofluoromethane (Surrogate)	%	-	74	74	93	76	71	71
d4-1,2-dichloroethane (Surrogate)	%	-	82	85	105	91	86	87
d8-toluene (Surrogate)	%	-	84	85	108	88	84	85
Bromofluorobenzene (Surrogate)	%	-	103	96	109	106	100	94

PARAMETER	UOM	LOR	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
Dibromofluoromethane (Surrogate)	%	-	70	73	78	86	85	86
d4-1,2-dichloroethane (Surrogate)	%	-	80	91	95	107	105	106
d8-toluene (Surrogate)	%	-	80	90	93	101	102	103
Bromofluorobenzene (Surrogate)	%	-	92	104	97	116	109	111

PARAMETER	UOM	LOR	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031	TP22-1.0 SOIL 11/9/2013 SE120709.032	QC 111 SOIL 11/9/2013 SE120709.038
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
Dibromofluoromethane (Surrogate)	%	-	79	80	77	77	77	90
d4-1,2-dichloroethane (Surrogate)	%	-	103	102	98	100	101	116
d8-toluene (Surrogate)	%	-	101	96	95	95	99	115
Bromofluorobenzene (Surrogate)	%	-	111	100	99	96	103	118

PARAMETER	UOM	LOR	QC 112 SOIL 11/9/2013 SE120709.039	TP28-2.0 SOIL 11/9/2013 SE120709.042
TRH C6-C9	mg/kg	20	<20	<20
Benzene (F0)	mg/kg	0.10	<0.1	<0.1
TRH C6-C10	mg/kg	25.0	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25
Dibromofluoromethane (Surrogate)	%	-	82	71
d4-1,2-dichloroethane (Surrogate)	%	-	108	90
d8-toluene (Surrogate)	%	-	104	85
Bromofluorobenzene (Surrogate)	%	-	103	88

TRH (Total Recoverable Hydrocarbons) in Soil [AN403]

PARAMETER	UOM	LOR	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP19-0.0 SOIL 11/9/2013 SE120709.019	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	<45	<45	<45	<45	**120**	<45
TRH C29-C36	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25	**35**	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	**110**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	**120**	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031	TP22-1.0 SOIL 11/9/2013 SE120709.032	QC 111 SOIL 11/9/2013 SE120709.038
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	QC 112 SOIL 11/9/2013 SE120709.039	TP28-2.0 SOIL 11/9/2013 SE120709.042
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45.0	**48**	<45
TRH C29-C36	mg/kg	45.0	<45	<45
TRH C37-C40	mg/kg	100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420]

PARAMETER	UOM	LOR	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP19-0.0 SOIL 11/9/2013 SE120709.019	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
d5-nitrobenzene (Surrogate)	%	-	94	98	96	92	92	92
2-fluorobiphenyl (Surrogate)	%	-	92	92	92	86	90	90
d14-p-terphenyl (Surrogate)	%	-	108	116	108	112	106	106

PARAMETER	UOM	LOR	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
d5-nitrobenzene (Surrogate)	%	-	94	86	90	88	94	94
2-fluorobiphenyl (Surrogate)	%	-	92	86	88	92	102	90
d14-p-terphenyl (Surrogate)	%	-	112	106	110	114	112	108

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] (continued)

PARAMETER	UOM	LOR	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031	TP22-1.0 SOIL 11/9/2013 SE120709.032	QC 111 SOIL 11/9/2013 SE120709.038
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
d5-nitrobenzene (Surrogate)	%	-	98	102	106	90	84	94
2-fluorobiphenyl (Surrogate)	%	-	102	96	106	98	86	94
d14-p-terphenyl (Surrogate)	%	-	108	104	114	110	104	102

PARAMETER	UOM	LOR	QC 112 SOIL 11/9/2013 SE120709.039	TP28-2.0 SOIL 11/9/2013 SE120709.042
Naphthalene	mg/kg	0.10	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1
Pyrene	mg/kg	0.10	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1
Chrysene	mg/kg	0.10	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1
Total PAH	mg/kg	0.80	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.20	<0.2	<0.2
d5-nitrobenzene (Surrogate)	%	-	88	92
2-fluorobiphenyl (Surrogate)	%	-	92	92
d14-p-terphenyl (Surrogate)	%	-	104	116

OC Pesticides in Soil [AN400/AN420]

PARAMETER	UOM	LOR	TP01-0.0 SOIL 10/9/2013 SE120709.001	TP02-0.0 SOIL 10/9/2013 SE120709.002	TP03-0.0 SOIL 10/9/2013 SE120709.003	TP04-0.0 SOIL 10/9/2013 SE120709.004	TP05-0.0 SOIL 9/9/2013 SE120709.005	TP06-0.0 SOIL 9/9/2013 SE120709.006
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloro-m-xylene (TCMX)	%	-	**101**	**105**	**123**	**109**	**101**	**101**

OC Pesticides in Soil [AN400/AN420] (continued)

PARAMETER	UOM	LOR	TP07-0.0 SOIL 9/9/2013 SE120709.007	TP08-0.0 SOIL 9/9/2013 SE120709.008	TP09-0.0 SOIL 9/9/2013 SE120709.009	TP10-0.0 SOIL 10/9/2013 SE120709.010	TP11-0.0 SOIL 10/9/2013 SE120709.011	TP12-0.0 SOIL 10/9/2013 SE120709.012
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloro-m-xylene (TCMX)	%	-	**105**	**109**	**107**	**109**	**113**	**107**

OC Pesticides in Soil [AN400/AN420] (continued)

PARAMETER	UOM	LOR	TP13-0.0 SOIL 10/9/2013 SE120709.013	TP14-0.0 SOIL 9/9/2013 SE120709.014	TP18-0.0 SOIL 10/9/2013 SE120709.018	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloro-m-xylene (TCMX)	%	-	105	102	111	75	99	108

OC Pesticides in Soil [AN400/AN420] (continued)

PARAMETER	UOM	LOR	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloro-m-xylene (TCMX)	%	-	**95**	**111**	**107**	**108**	**113**	**107**

OC Pesticides in Soil [AN400/AN420] (continued)

PARAMETER	UOM	LOR	QC 111 SOIL 11/9/2013 SE120709.038	TP28-2.0 SOIL 11/9/2013 SE120709.042
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1
Dieldrin	mg/kg	0.20	<0.2	<0.2
Endrin	mg/kg	0.20	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1
Tetrachloro-m-xylene (TCMX)	%	-	**115**	**118**

OP Pesticides in Soil [AN400/AN420]

PARAMETER	UOM	LOR	TP01-0.0 SOIL 10/9/2013 SE120709.001	TP02-0.0 SOIL 10/9/2013 SE120709.002	TP03-0.0 SOIL 10/9/2013 SE120709.003	TP04-0.0 SOIL 10/9/2013 SE120709.004	TP05-0.0 SOIL 9/9/2013 SE120709.005	TP06-0.0 SOIL 9/9/2013 SE120709.006
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%	-	106	108	120	104	110	112
d14-p-terphenyl (Surrogate)	%	-	108	112	122	110	116	116

PARAMETER	UOM	LOR	TP07-0.0 SOIL 9/9/2013 SE120709.007	TP08-0.0 SOIL 9/9/2013 SE120709.008	TP09-0.0 SOIL 9/9/2013 SE120709.009	TP10-0.0 SOIL 10/9/2013 SE120709.010	TP11-0.0 SOIL 10/9/2013 SE120709.011	TP12-0.0 SOIL 10/9/2013 SE120709.012
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%	-	110	102	110	102	120	112
d14-p-terphenyl (Surrogate)	%	-	118	106	114	104	126	116

PARAMETER	UOM	LOR	TP13-0.0 SOIL 10/9/2013 SE120709.013	TP14-0.0 SOIL 9/9/2013 SE120709.014	TP18-0.0 SOIL 10/9/2013 SE120709.018	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%	-	106	104	100	92	86	88
d14-p-terphenyl (Surrogate)	%	-	110	108	104	112	106	110

OP Pesticides in Soil [AN400/AN420] (continued)

PARAMETER	UOM	LOR	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%	-	**92**	**102**	**90**	**102**	**96**	**106**
d14-p-terphenyl (Surrogate)	%	-	**114**	**112**	**108**	**108**	**104**	**114**

PARAMETER	UOM	LOR	QC 111 SOIL 11/9/2013 SE120709.038	TP28-2.0 SOIL 11/9/2013 SE120709.042
Dichlorvos	mg/kg	0.50	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%	-	**94**	**92**
d14-p-terphenyl (Surrogate)	%	-	**102**	**116**

PCBs in Soil [AN400/AN420]

PARAMETER	UOM	LOR	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027
Arochlor 1016	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1.0	<1	<1	<1	<1	<1	<1
Tetrachloro-m-xylene (TCMX)	%	-	**75**	**99**	**108**	**95**	**111**	**107**

PARAMETER	UOM	LOR	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	QC 111 SOIL 11/9/2013 SE120709.038	TP28-2.0 SOIL 11/9/2013 SE120709.042
Arochlor 1016	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1.0	<1	<1	<1	<1	<1
Tetrachloro-m-xylene (TCMX)	%	-	**108**	**113**	**107**	**115**	**118**

Total Phenolics in Soil [AN289]

PARAMETER	UOM	LOR	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027
Total Phenols	mg/kg	0.10	**0.1**	<0.1	**0.2**	<0.1	<0.1	**0.3**

PARAMETER	UOM	LOR	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	QC 111 SOIL 11/9/2013 SE120709.038	TP28-2.0 SOIL 11/9/2013 SE120709.042
Total Phenols	mg/kg	0.10	<0.1	<0.1	<0.1	**0.1**	<0.1

Hexavalent Chromium in Soil UV/Vis [AN075/AN201]

PARAMETER	UOM	LOR	TP01-0.0 SOIL 10/9/2013 SE120709.001	TP02-0.0 SOIL 10/9/2013 SE120709.002	TP03-0.0 SOIL 10/9/2013 SE120709.003	TP04-0.0 SOIL 10/9/2013 SE120709.004	TP05-0.0 SOIL 9/9/2013 SE120709.005	TP06-0.0 SOIL 9/9/2013 SE120709.006
Hexavalent Chromium, Cr6+	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	UOM	LOR	TP07-0.0 SOIL 9/9/2013 SE120709.007	TP08-0.0 SOIL 9/9/2013 SE120709.008	TP09-0.0 SOIL 9/9/2013 SE120709.009	TP10-0.0 SOIL 10/9/2013 SE120709.010	TP11-0.0 SOIL 10/9/2013 SE120709.011	TP12-0.0 SOIL 10/9/2013 SE120709.012
Hexavalent Chromium, Cr6+	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	UOM	LOR	TP13-0.0 SOIL 10/9/2013 SE120709.013	TP14-0.0 SOIL 9/9/2013 SE120709.014	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP18-0.0 SOIL 10/9/2013 SE120709.018
Hexavalent Chromium, Cr6+	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	UOM	LOR	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025
Hexavalent Chromium, Cr6+	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	UOM	LOR	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031
Hexavalent Chromium, Cr6+	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	UOM	LOR	TP22-1.0 SOIL 11/9/2013 SE120709.032	TP20-0.0 SOIL 11/9/2013 SE120709.033	TP20-0.5 SOIL 11/9/2013 SE120709.034	QC 111 SOIL 11/9/2013 SE120709.038	QC 112 SOIL 11/9/2013 SE120709.039	TP28-2.0 SOIL 11/9/2013 SE120709.042
Hexavalent Chromium, Cr6+	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest [AN040/AN320]

PARAMETER	UOM	LOR	TP01-0.0 SOIL 10/9/2013 SE120709.001	TP02-0.0 SOIL 10/9/2013 SE120709.002	TP03-0.0 SOIL 10/9/2013 SE120709.003	TP04-0.0 SOIL 10/9/2013 SE120709.004	TP05-0.0 SOIL 9/9/2013 SE120709.005	TP06-0.0 SOIL 9/9/2013 SE120709.006
Arsenic, As	mg/kg	3.0	3	<3	9	<3	6	5
Beryllium, Be	mg/kg	0.30	0.5	0.7	1.1	0.6	0.7	0.4
Boron, B	mg/kg	5.0	<5	<5	<5	<5	<5	<5
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt, Co	mg/kg	0.30	8.4	4.4	15	6.2	8.4	5.2
Copper, Cu	mg/kg	0.50	10	6.5	16	8.6	14	10
Lead, Pb	mg/kg	1.0	19	18	35	15	39	54
Manganese, Mn	mg/kg	0.30	620	250	1200	310	720	900
Nickel, Ni	mg/kg	0.50	7.8	4.3	13	11	11	6.2
Selenium, Se	mg/kg	2.0	<2	<2	<2	<2	<2	<2
Zinc, Zn	mg/kg	0.50	41	22	49	45	68	56

PARAMETER	UOM	LOR	TP07-0.0 SOIL 9/9/2013 SE120709.007	TP08-0.0 SOIL 9/9/2013 SE120709.008	TP09-0.0 SOIL 9/9/2013 SE120709.009	TP10-0.0 SOIL 10/9/2013 SE120709.010	TP11-0.0 SOIL 10/9/2013 SE120709.011	TP12-0.0 SOIL 10/9/2013 SE120709.012
Arsenic, As	mg/kg	3.0	8	5	6	4	7	4
Beryllium, Be	mg/kg	0.30	0.8	0.6	0.5	0.8	0.8	0.5
Boron, B	mg/kg	5.0	<5	<5	<5	<5	<5	<5
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt, Co	mg/kg	0.30	12	8.7	6.7	18	13	6.3
Copper, Cu	mg/kg	0.50	15	12	11	23	16	7.1
Lead, Pb	mg/kg	1.0	93	47	52	62	23	15
Manganese, Mn	mg/kg	0.30	830	530	410	1500	820	360
Nickel, Ni	mg/kg	0.50	8.8	8.8	7.9	9.0	20	8.3
Selenium, Se	mg/kg	2.0	<2	<2	<2	<2	<2	<2
Zinc, Zn	mg/kg	0.50	50	49	75	34	46	110

PARAMETER	UOM	LOR	TP13-0.0 SOIL 10/9/2013 SE120709.013	TP14-0.0 SOIL 9/9/2013 SE120709.014	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP18-0.0 SOIL 10/9/2013 SE120709.018
Arsenic, As	mg/kg	3.0	11	<3	6	7	8	8
Beryllium, Be	mg/kg	0.30	0.6	0.4	0.6	0.6	0.6	1.1
Boron, B	mg/kg	5.0	<5	<5	<5	<5	<5	<5
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	0.6	<0.3	<0.3	<0.3
Cobalt, Co	mg/kg	0.30	6.8	6.0	7.8	17	8.2	30
Copper, Cu	mg/kg	0.50	8.2	8.1	32	13	9.6	17
Lead, Pb	mg/kg	1.0	21	17	130	110	25	49
Manganese, Mn	mg/kg	0.30	650	880	800	1200	390	1900
Nickel, Ni	mg/kg	0.50	6.5	6.8	8.8	9.8	12	19
Selenium, Se	mg/kg	2.0	<2	<2	<2	<2	<2	2
Zinc, Zn	mg/kg	0.50	27	30	260	95	49	18

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest [AN040/AN320] (continued)

PARAMETER	UOM	LOR	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025
Arsenic, As	mg/kg	3.0	5	11	9	8	4	6
Beryllium, Be	mg/kg	0.30	0.6	0.6	0.8	0.7	0.4	0.7
Boron, B	mg/kg	5.0	<5	30	<5	<5	<5	<5
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt, Co	mg/kg	0.30	5.5	7.2	9.9	15	5.6	12
Copper, Cu	mg/kg	0.50	30	25	19	14	7.6	22
Lead, Pb	mg/kg	1.0	34	37	28	29	10	25
Manganese, Mn	mg/kg	0.30	350	270	460	730	210	1100
Nickel, Ni	mg/kg	0.50	12	21	19	20	7.5	18
Selenium, Se	mg/kg	2.0	<2	<2	<2	<2	<2	<2
Zinc, Zn	mg/kg	0.50	93	71	55	66	24	53

PARAMETER	UOM	LOR	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031
Arsenic, As	mg/kg	3.0	5	10	6	12	10	7
Beryllium, Be	mg/kg	0.30	0.7	0.7	0.8	0.7	0.8	1.1
Boron, B	mg/kg	5.0	<5	<5	<5	<5	7	8
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt, Co	mg/kg	0.30	11	11	11	12	13	8.8
Copper, Cu	mg/kg	0.50	39	12	22	21	20	17
Lead, Pb	mg/kg	1.0	24	23	14	31	32	51
Manganese, Mn	mg/kg	0.30	740	520	970	720	640	400
Nickel, Ni	mg/kg	0.50	19	17	22	22	24	19
Selenium, Se	mg/kg	2.0	<2	<2	<2	<2	<2	<2
Zinc, Zn	mg/kg	0.50	65	45	49	74	79	96

PARAMETER	UOM	LOR	TP22-1.0 SOIL 11/9/2013 SE120709.032	TP20-0.0 SOIL 11/9/2013 SE120709.033	TP20-0.5 SOIL 11/9/2013 SE120709.034	QC 111 SOIL 11/9/2013 SE120709.038	QC 112 SOIL 11/9/2013 SE120709.039	TP28-2.0 SOIL 11/9/2013 SE120709.042
Arsenic, As	mg/kg	3.0	13	4	<3	4	9	7
Beryllium, Be	mg/kg	0.30	1.0	<0.3	<0.3	0.5	0.6	0.8
Boron, B	mg/kg	5.0	11	6	<5	<5	46	<5
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt, Co	mg/kg	0.30	10	3.1	1.8	7.0	6.7	12
Copper, Cu	mg/kg	0.50	27	70	3.2	10	28	20
Lead, Pb	mg/kg	1.0	29	160	10	10	27	11
Manganese, Mn	mg/kg	0.30	630	160	73	730	250	620
Nickel, Ni	mg/kg	0.50	37	9.4	3.1	12	20	24
Selenium, Se	mg/kg	2.0	<2	<2	<2	<2	<2	<2
Zinc, Zn	mg/kg	0.50	150	44	7.9	48	60	38

Mercury in Soil [AN312]

PARAMETER	UOM	LOR	TP01-0.0 SOIL 10/9/2013 SE120709.001	TP02-0.0 SOIL 10/9/2013 SE120709.002	TP03-0.0 SOIL 10/9/2013 SE120709.003	TP04-0.0 SOIL 10/9/2013 SE120709.004	TP05-0.0 SOIL 9/9/2013 SE120709.005	TP06-0.0 SOIL 9/9/2013 SE120709.006
Mercury	mg/kg	0.010	0.02	0.02	0.01	0.01	0.02	0.02

PARAMETER	UOM	LOR	TP07-0.0 SOIL 9/9/2013 SE120709.007	TP08-0.0 SOIL 9/9/2013 SE120709.008	TP09-0.0 SOIL 9/9/2013 SE120709.009	TP10-0.0 SOIL 10/9/2013 SE120709.010	TP11-0.0 SOIL 10/9/2013 SE120709.011	TP12-0.0 SOIL 10/9/2013 SE120709.012
Mercury	mg/kg	0.010	0.03	0.02	0.02	0.03	0.02	0.02

PARAMETER	UOM	LOR	TP13-0.0 SOIL 10/9/2013 SE120709.013	TP14-0.0 SOIL 9/9/2013 SE120709.014	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP18-0.0 SOIL 10/9/2013 SE120709.018
Mercury	mg/kg	0.010	0.02	0.01	0.19	0.02	0.01	0.02

PARAMETER	UOM	LOR	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025
Mercury	mg/kg	0.010	0.02	0.02	0.02	0.01	0.01	0.01

PARAMETER	UOM	LOR	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031
Mercury	mg/kg	0.010	<0.01	0.04	0.01	0.03	0.04	0.03

PARAMETER	UOM	LOR	TP22-1.0 SOIL 11/9/2013 SE120709.032	TP20-0.0 SOIL 11/9/2013 SE120709.033	TP20-0.5 SOIL 11/9/2013 SE120709.034	QC 111 SOIL 11/9/2013 SE120709.038	QC 112 SOIL 11/9/2013 SE120709.039	TP28-2.0 SOIL 11/9/2013 SE120709.042
Mercury	mg/kg	0.010	0.01	0.01	0.01	<0.01	0.01	<0.01

Fibre Identification in soil [AN602]

PARAMETER	UOM	LOR	TP12-0.0 SOIL 10/9/2013 SE120709.012	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	TP24-0.0 SOIL 11/9/2013 SE120709.024	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	TP25-2.0 SOIL 11/9/2013 SE120709.030	TP22-0.5 SOIL 11/9/2013 SE120709.031	TP22-1.0 SOIL 11/9/2013 SE120709.032	TP20-0.0 SOIL 11/9/2013 SE120709.033	QC 111 SOIL 11/9/2013 SE120709.038	QC 112 SOIL 11/9/2013 SE120709.039
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	TP28-2.0 SOIL 11/9/2013 SE120709.042
Asbestos Detected	No unit	-	No
Estimated Fibres	%w/w	0.010	<0.01

Moisture Content [AN002]

PARAMETER	UOM	LOR	TP01-0.0 SOIL 10/9/2013 SE120709.001	TP02-0.0 SOIL 10/9/2013 SE120709.002	TP03-0.0 SOIL 10/9/2013 SE120709.003	TP04-0.0 SOIL 10/9/2013 SE120709.004	TP05-0.0 SOIL 9/9/2013 SE120709.005	TP06-0.0 SOIL 9/9/2013 SE120709.006
% Moisture	%	0.50	11.7	15.3	24.3	7.0	22.4	15.2

PARAMETER	UOM	LOR	TP07-0.0 SOIL 9/9/2013 SE120709.007	TP08-0.0 SOIL 9/9/2013 SE120709.008	TP09-0.0 SOIL 9/9/2013 SE120709.009	TP10-0.0 SOIL 10/9/2013 SE120709.010	TP11-0.0 SOIL 10/9/2013 SE120709.011	TP12-0.0 SOIL 10/9/2013 SE120709.012
% Moisture	%	0.50	18.0	22.3	19.7	18.8	15.4	24.7

PARAMETER	UOM	LOR	TP13-0.0 SOIL 10/9/2013 SE120709.013	TP14-0.0 SOIL 9/9/2013 SE120709.014	TP15-0.0 SOIL 9/9/2013 SE120709.015	TP16-0.0 SOIL 9/9/2013 SE120709.016	TP17-0.0 SOIL 9/9/2013 SE120709.017	TP18-0.0 SOIL 10/9/2013 SE120709.018
% Moisture	%	0.50	13.5	14.2	13.4	27.8	7.5	14.7

PARAMETER	UOM	LOR	TP19-0.0 SOIL 11/9/2013 SE120709.019	TP21-0.5 SOIL 11/9/2013 SE120709.020	TP21-1.0 SOIL 11/9/2013 SE120709.021	TP23-0.5 SOIL 11/9/2013 SE120709.022	TP23-2.0 SOIL 11/9/2013 SE120709.023	TP24-0.0 SOIL 11/9/2013 SE120709.024
% Moisture	%	0.50	11.3	17.0	25.3	17.4	8.1	23.0

PARAMETER	UOM	LOR	TP26-0.5 SOIL 11/9/2013 SE120709.025	TP26-2.0 SOIL 11/9/2013 SE120709.026	TP27-0.0 SOIL 11/9/2013 SE120709.027	TP28-0.5 SOIL 11/9/2013 SE120709.028	TP25-0.5 SOIL 11/9/2013 SE120709.029	TP25-2.0 SOIL 11/9/2013 SE120709.030
% Moisture	%	0.50	12.6	11.3	9.6	13.3	10.5	10.6

PARAMETER	UOM	LOR	TP22-0.5 SOIL 11/9/2013 SE120709.031	TP22-1.0 SOIL 11/9/2013 SE120709.032	TP20-0.0 SOIL 11/9/2013 SE120709.033	TP20-0.5 SOIL 11/9/2013 SE120709.034	QC 111 SOIL 11/9/2013 SE120709.038	QC 112 SOIL 11/9/2013 SE120709.039
% Moisture	%	0.50	17.7	19.0	1.9	4.7	12.3	18.0

PARAMETER	UOM	LOR	TP28-2.0 SOIL 11/9/2013 SE120709.042
% Moisture	%	0.50	14.6

Volatile Petroleum Hydrocarbons in Water [AN433/AN434/AN410]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037	Trip Blank WATER 9/9/2013 SE120709.040
Benzene (F0)	µg/L	0.50	<0.5	<0.5	<0.5	<0.5
TRH C6-C9	µg/L	40	<40	<40	<40	<40
TRH C6-C10	µg/L	50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50
Dibromofluoromethane (Surrogate)	%	-	103	106	106	107
d4-1,2-dichloroethane (Surrogate)	%	-	111	115	115	117
d8-toluene (Surrogate)	%	-	106	108	106	106
Bromofluorobenzene (Surrogate)	%	-	100	99	100	100

VOCs in Water [AN433/AN434]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037	Trip Blank WATER 9/9/2013 SE120709.040
Benzene	µg/L	0.50	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.50	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.50	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1.0	<1	<1	<1	<1
o-xylene	µg/L	0.50	<0.5	<0.5	<0.5	<0.5
Naphthalene	µg/L	0.50	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.50	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3.0	<3	<3	<3	<3
Dibromofluoromethane (Surrogate)	%	-	103	106	106	107
d4-1,2-dichloroethane (Surrogate)	%	-	111	115	115	117
d8-toluene (Surrogate)	%	-	106	108	106	106
Bromofluorobenzene (Surrogate)	%	-	100	99	100	100

TRH (Total Recoverable Hydrocarbons) in Water [AN403]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
TRH C10-C14	µg/L	50	<50	<50	<50
TRH C15-C28	µg/L	200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200
TRH >C10-C16 (F2)	µg/L	60	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500
TRH C10-C36	µg/L	450	<450	<450	<450
TRH C10-C40	µg/L	650	<650	<650	<650

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Naphthalene	µg/L	0.10	<0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.10	<0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.10	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.10	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.10	<0.1	<0.1	<0.1
Fluorene	µg/L	0.10	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.10	<0.1	<0.1	<0.1
Anthracene	µg/L	0.10	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.10	<0.1	<0.1	<0.1
Pyrene	µg/L	0.10	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.10	<0.1	<0.1	<0.1
Chrysene	µg/L	0.10	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.10	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.10	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.10	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.10	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	µg/L	0.10	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.10	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1.0	<1	<1	<1
d5-nitrobenzene (Surrogate)	%	-	**76**	**84**	**96**
2-fluorobiphenyl (Surrogate)	%	-	**88**	**96**	**104**
d14-p-terphenyl (Surrogate)	%	-	**116**	**124**	**120**

OC Pesticides in Water [AN400/AN420]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Alpha BHC	µg/L	0.10	<0.1	<0.1	<0.1
Hexachlorobenzene (HCB)	µg/L	0.10	<0.1	<0.1	<0.1
Beta BHC	µg/L	0.10	<0.1	<0.1	<0.1
Lindane (gamma BHC)	µg/L	0.10	<0.1	<0.1	<0.1
Delta BHC	µg/L	0.10	<0.1	<0.1	<0.1
Heptachlor	µg/L	0.10	<0.1	<0.1	<0.1
Aldrin	µg/L	0.10	<0.1	<0.1	<0.1
Heptachlor epoxide	µg/L	0.10	<0.1	<0.1	<0.1
Gamma Chlordane	µg/L	0.10	<0.1	<0.1	<0.1
Alpha Chlordane	µg/L	0.10	<0.1	<0.1	<0.1
Alpha Endosulfan	µg/L	0.10	<0.1	<0.1	<0.1
o,p'-DDE	µg/L	0.10	<0.1	<0.1	<0.1
p,p'-DDE	µg/L	0.10	<0.1	<0.1	<0.1
Dieldrin	µg/L	0.10	<0.1	<0.1	<0.1
Endrin	µg/L	0.10	<0.1	<0.1	<0.1
Beta Endosulfan	µg/L	0.10	<0.1	<0.1	<0.1
o,p'-DDD	µg/L	0.10	<0.1	<0.1	<0.1
p,p'-DDD	µg/L	0.10	<0.1	<0.1	<0.1
Endosulfan sulphate	µg/L	0.10	<0.1	<0.1	<0.1
o,p'-DDT	µg/L	0.10	<0.1	<0.1	<0.1
p,p'-DDT	µg/L	0.10	<0.1	<0.1	<0.1
Endrin ketone	µg/L	0.10	<0.1	<0.1	<0.1
Methoxychlor	µg/L	0.10	<0.1	<0.1	<0.1
trans-Nonachlor	µg/L	0.10	<0.1	<0.1	<0.1
Endrin aldehyde	µg/L	0.10	<0.1	<0.1	<0.1
Isodrin	µg/L	0.10	<0.1	<0.1	<0.1
Mirex	µg/L	0.10	<0.1	<0.1	<0.1
Tetrachloro-m-xylene (TCMX)	%	-	**68**	**71**	**68**

OP Pesticides in Water [AN400/AN420]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Dichlorvos	µg/L	0.50	<0.5	<0.5	<0.5
Dimethoate	µg/L	0.50	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	µg/L	0.50	<0.5	<0.5	<0.5
Fenitrothion	µg/L	0.20	<0.2	<0.2	<0.2
Malathion	µg/L	0.20	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.20	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	µg/L	0.20	<0.2	<0.2	<0.2
Bromophos Ethyl	µg/L	0.20	<0.2	<0.2	<0.2
Methidathion	µg/L	0.50	<0.5	<0.5	<0.5
Ethion	µg/L	0.20	<0.2	<0.2	<0.2
Azinphos-methyl	µg/L	0.20	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%	-	**88**	**96**	**104**
d14-p-terphenyl (Surrogate)	%	-	**116**	**124**	**120**

PCBs in Water [AN400/AN420]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Arochlor 1016	µg/L	1.0	<1	<1	<1
Arochlor 1221	µg/L	1.0	<1	<1	<1
Arochlor 1232	µg/L	1.0	<1	<1	<1
Arochlor 1242	µg/L	1.0	<1	<1	<1
Arochlor 1248	µg/L	1.0	<1	<1	<1
Arochlor 1254	µg/L	1.0	<1	<1	<1
Arochlor 1260	µg/L	1.0	<1	<1	<1
Arochlor 1262	µg/L	1.0	<1	<1	<1
Arochlor 1268	µg/L	1.0	<1	<1	<1
Total Arochlors*	µg/L	5.0	<5	<5	<5
Tetrachloro-m-xylene (Surrogate)	%	-	**68**	**71**	**68**

Total Phenolics in Water [AN289]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Total Phenols	mg/L	0.010	<0.01	<0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS [AN318]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Arsenic, As	µg/L	1.0	<1	<1	<1
Beryllium, Be	µg/L	1.0	<1	<1	<1
Boron, B	µg/L	5.0	<5	<5	<5
Cadmium, Cd	µg/L	0.10	<0.1	<0.1	<0.1
Cobalt, Co	µg/L	1.0	<1	<1	<1
Copper, Cu	µg/L	1.0	<1	<1	<1
Lead, Pb	µg/L	1.0	<1	<1	<1
Manganese, Mn	µg/L	1.0	<1	<1	<1
Nickel, Ni	µg/L	1.0	<1	<1	<1
Selenium, Se	µg/L	1.0	<1	<1	<1
Zinc, Zn	µg/L	5.0	<5	<5	7

Hexavalent Chromium in water by Discrete Analyser [AN283]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Hexavalent Chromium, Cr6+	mg/L	0.0050	<0.005	<0.005	<0.005

Mercury (dissolved) in Water [AN311/AN312]

PARAMETER	UOM	LOR	QC 101 WATER 9/9/2013 SE120709.035	QC 105 WATER 10/9/2013 SE120709.036	QC 109 WATER 11/9/2013 SE120709.037
Mercury	mg/L	0.00010	<0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN075	This method uses an alkaline digestion to solubilise both water-soluble and water-insoluble forms of hexavalent chromium in solids. The solution is then pH adjusted and the hexavalent chromium concentration in solution determined colourimetrically.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN201	Cr6+ is determined colourimetrically by reaction with diphenylcarbazide in acid solution. A red-violet colour of unknown composition is produced.
AN283	Hexavalent Chromium via Aquakem DA: Soluble hexavalent chromium forms a red/violet colour with diphenylcarbazide in acidic solution. This procedure is very sensitive and nearly specific for Cr 6+. If total chromium is also measured the trivalent form of chromium Cr 3+ can be calculated from the difference (Total Cr - Cr6+). Reference APHA3500CrB.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
^	Performed by outside laboratory.				

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

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	Nathalie O'Toole
Client	SMEC Australia Pty Ltd - ACT
Address	Sun Micro Building Suite 2, Level 1 243 Northbourne Avenue LYNEHAM ACT 2602
Telephone	02 6234 1900
Facsimile	02 6234 1966
Email	Nathalie.O'Toole@smec.com
Project	**3002369 - OCB**
Order Number	**0304--0313**
Samples	42

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE120709 R0
Report Number	0000065714
Date Reported	20 Sep 2013
Date Received	12 Sep 2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all samples using trace analysis technique.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ravee Sivasubramaniam
Asbestos Analyst

Sheila Lepasana
Senior Technician

Snezana Kostoska
2IC Inorganics Chemist

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE120709.012	TP12-0.0	Soil	55g Soil,plantmatter	10 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.015	TP15-0.0	Soil	40g Soil,plantmatter	09 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.016	TP16-0.0	Soil	80g Soil,rocks	09 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.017	TP17-0.0	Soil	75g Soil,rocks,plant matter	09 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.022	TP23-0.5	Soil	67g Soil,clay,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.023	TP23-2.0	Soil	88g Clay,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.024	TP24-0.0	Soil	75g Soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.025	TP26-0.5	Soil	61g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.026	TP26-2.0	Soil	70g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.027	TP27-0.0	Soil	56g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.028	TP28-0.5	Soil	73g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.029	TP25-0.5	Soil	96g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.030	TP25-2.0	Soil	74g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.031	TP22-0.5	Soil	69g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.032	TP22-1.0	Soil	72g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.033	TP20-0.0	Soil	75g Soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.038	QC 111	Soil	64g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.039	QC 112	Soil	59g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE120709.042	TP28-2.0	Soil	63g Clay,soil,rocks	11 Sep 2013	No Asbestos Found Organic Fibres Detected	<0.01

METHOD SUMMARY

SE120709 R0

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

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

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

Sampled by the client.

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

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE120709 R0

CLIENT DETAILS

Contact	Nathalie O'Toole
Client	SMEC Australia Pty Ltd - ACT
Address	Sun Micro Building Suite 2, Level 1 243 Northbourne Avenue LYNEHAM ACT 2602
Telephone	02 6234 1900
Facsimile	02 6234 1966
Email	Nathalie.O'Toole@smec.com
Project	**3002369 - OCB**
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Address	Unit 16, 33 Maddox St Alexandria NSW 2015
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Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE120709 R0
Report Number	0000065767
Date Reported	20 Sep 2013

COMMENTS

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

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

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

Duplicate	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	1 item
	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	1 item
Matrix Spike	Hexavalent Chromium in Soil UV/Vis	1 item
	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	4 items
	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	3 items

SAMPLE SUMMARY

Sample counts by matrix	38 Soils, 4 Waters	Type of documentation received	COC
Date documentation received	12/9/13@3:25pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE120709 R0

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

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

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

Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP12-0.0	SE120709.012	LB045113	10 Sep 2013	12 Sep 2013	10 Sep 2014	19 Sep 2013	10 Sep 2014	19 Sep 2013
TP15-0.0	SE120709.015	LB045113	09 Sep 2013	12 Sep 2013	09 Sep 2014	19 Sep 2013	09 Sep 2014	19 Sep 2013
TP16-0.0	SE120709.016	LB045113	09 Sep 2013	12 Sep 2013	09 Sep 2014	19 Sep 2013	09 Sep 2014	19 Sep 2013
TP17-0.0	SE120709.017	LB045113	09 Sep 2013	12 Sep 2013	09 Sep 2014	19 Sep 2013	09 Sep 2014	19 Sep 2013
TP23-0.5	SE120709.022	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP23-2.0	SE120709.023	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP24-0.0	SE120709.024	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP26-0.5	SE120709.025	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP26-2.0	SE120709.026	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP27-0.0	SE120709.027	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP28-0.5	SE120709.028	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP25-0.5	SE120709.029	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP25-2.0	SE120709.030	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP22-0.5	SE120709.031	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP22-1.0	SE120709.032	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP20-0.0	SE120709.033	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
QC 111	SE120709.038	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
QC 112	SE120709.039	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013
TP28-2.0	SE120709.042	LB045113	11 Sep 2013	12 Sep 2013	11 Sep 2014	19 Sep 2013	11 Sep 2014	19 Sep 2013

Hexavalent Chromium in Soil UV/Vis

Method: ME-(AU)-[ENV]AN075/AN201

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP02-0.0	SE120709.002	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP03-0.0	SE120709.003	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP04-0.0	SE120709.004	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP05-0.0	SE120709.005	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP06-0.0	SE120709.006	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP07-0.0	SE120709.007	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP08-0.0	SE120709.008	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP09-0.0	SE120709.009	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP10-0.0	SE120709.010	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP11-0.0	SE120709.011	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP12-0.0	SE120709.012	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP13-0.0	SE120709.013	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP14-0.0	SE120709.014	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP15-0.0	SE120709.015	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB045093	09 Sep 2013	12 Sep 2013	07 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP18-0.0	SE120709.018	LB045093	10 Sep 2013	12 Sep 2013	08 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB045093	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP23-0.5	SE120709.022	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP22-0.5	SE120709.031	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP22-1.0	SE120709.032	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP20-0.0	SE120709.033	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP20-0.5	SE120709.034	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
QC 111	SE120709.038	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
QC 112	SE120709.039	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB045094	11 Sep 2013	12 Sep 2013	09 Oct 2013	19 Sep 2013	22 Sep 2013	19 Sep 2013

Hexavalent Chromium in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN283

Sample Name	Sample No.	QC Ref

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

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

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

Hexavalent Chromium in water by Discrete Analyser (continued)

Method: ME-(AU)-[ENV]AN283

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044812	09 Sep 2013	12 Sep 2013	07 Oct 2013	13 Sep 2013	07 Oct 2013	13 Sep 2013
QC 105	SE120709.036	LB044812	10 Sep 2013	12 Sep 2013	08 Oct 2013	13 Sep 2013	08 Oct 2013	13 Sep 2013
QC 109	SE120709.037	LB044812	11 Sep 2013	12 Sep 2013	09 Oct 2013	13 Sep 2013	09 Oct 2013	13 Sep 2013

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB045071	09 Sep 2013	12 Sep 2013	07 Oct 2013	18 Sep 2013	07 Oct 2013	19 Sep 2013
QC 105	SE120709.036	LB045071	10 Sep 2013	12 Sep 2013	08 Oct 2013	18 Sep 2013	08 Oct 2013	19 Sep 2013
QC 109	SE120709.037	LB045071	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	19 Sep 2013

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB044936	10 Sep 2013	12 Sep 2013	08 Oct 2013	17 Sep 2013	08 Oct 2013	18 Sep 2013
TP02-0.0	SE120709.002	LB044936	10 Sep 2013	12 Sep 2013	08 Oct 2013	17 Sep 2013	08 Oct 2013	18 Sep 2013
TP03-0.0	SE120709.003	LB044936	10 Sep 2013	12 Sep 2013	08 Oct 2013	17 Sep 2013	08 Oct 2013	18 Sep 2013
TP04-0.0	SE120709.004	LB044936	10 Sep 2013	12 Sep 2013	08 Oct 2013	17 Sep 2013	08 Oct 2013	18 Sep 2013
TP05-0.0	SE120709.005	LB044936	09 Sep 2013	12 Sep 2013	07 Oct 2013	17 Sep 2013	07 Oct 2013	18 Sep 2013
TP06-0.0	SE120709.006	LB044936	09 Sep 2013	12 Sep 2013	07 Oct 2013	17 Sep 2013	07 Oct 2013	18 Sep 2013
TP07-0.0	SE120709.007	LB044936	09 Sep 2013	12 Sep 2013	07 Oct 2013	17 Sep 2013	07 Oct 2013	18 Sep 2013
TP08-0.0	SE120709.008	LB044936	09 Sep 2013	12 Sep 2013	07 Oct 2013	17 Sep 2013	07 Oct 2013	18 Sep 2013
TP09-0.0	SE120709.009	LB044936	09 Sep 2013	12 Sep 2013	07 Oct 2013	17 Sep 2013	07 Oct 2013	18 Sep 2013
TP10-0.0	SE120709.010	LB044998	10 Sep 2013	12 Sep 2013	08 Oct 2013	18 Sep 2013	08 Oct 2013	18 Sep 2013
TP11-0.0	SE120709.011	LB044998	10 Sep 2013	12 Sep 2013	08 Oct 2013	18 Sep 2013	08 Oct 2013	18 Sep 2013
TP12-0.0	SE120709.012	LB044998	10 Sep 2013	12 Sep 2013	08 Oct 2013	18 Sep 2013	08 Oct 2013	18 Sep 2013
TP13-0.0	SE120709.013	LB044998	10 Sep 2013	12 Sep 2013	08 Oct 2013	18 Sep 2013	08 Oct 2013	18 Sep 2013
TP14-0.0	SE120709.014	LB044998	09 Sep 2013	12 Sep 2013	07 Oct 2013	18 Sep 2013	07 Oct 2013	18 Sep 2013
TP15-0.0	SE120709.015	LB044998	09 Sep 2013	12 Sep 2013	07 Oct 2013	18 Sep 2013	07 Oct 2013	18 Sep 2013
TP16-0.0	SE120709.016	LB044998	09 Sep 2013	12 Sep 2013	07 Oct 2013	18 Sep 2013	07 Oct 2013	18 Sep 2013
TP17-0.0	SE120709.017	LB044998	09 Sep 2013	12 Sep 2013	07 Oct 2013	18 Sep 2013	07 Oct 2013	18 Sep 2013
TP18-0.0	SE120709.018	LB044998	10 Sep 2013	12 Sep 2013	08 Oct 2013	18 Sep 2013	08 Oct 2013	18 Sep 2013
TP21-0.5	SE120709.020	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP21-1.0	SE120709.021	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP23-0.5	SE120709.022	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP23-2.0	SE120709.023	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP24-0.0	SE120709.024	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP26-0.5	SE120709.025	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP26-2.0	SE120709.026	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP27-0.0	SE120709.027	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP28-0.5	SE120709.028	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP25-0.5	SE120709.029	LB044998	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP25-2.0	SE120709.030	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP22-0.5	SE120709.031	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP22-1.0	SE120709.032	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP20-0.0	SE120709.033	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP20-0.5	SE120709.034	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
QC 111	SE120709.038	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
QC 112	SE120709.039	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013
TP28-2.0	SE120709.042	LB045000	11 Sep 2013	12 Sep 2013	09 Oct 2013	18 Sep 2013	09 Oct 2013	18 Sep 2013

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP02-0.0	SE120709.002	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP03-0.0	SE120709.003	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP04-0.0	SE120709.004	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP05-0.0	SE120709.005	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP06-0.0	SE120709.006	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP07-0.0	SE120709.007	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP08-0.0	SE120709.008	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP09-0.0	SE120709.009	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP10-0.0	SE120709.010	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013

HOLDING TIME SUMMARY

SE120709 R0

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

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

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

Moisture Content (continued)

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP11-0.0	SE120709.011	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP12-0.0	SE120709.012	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP13-0.0	SE120709.013	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP14-0.0	SE120709.014	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP15-0.0	SE120709.015	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB045006	09 Sep 2013	12 Sep 2013	23 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP18-0.0	SE120709.018	LB045006	10 Sep 2013	12 Sep 2013	24 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP19-0.0	SE120709.019	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP23-0.5	SE120709.022	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP22-0.5	SE120709.031	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP22-1.0	SE120709.032	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP20-0.0	SE120709.033	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP20-0.5	SE120709.034	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
QC 111	SE120709.038	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
QC 112	SE120709.039	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB045006	11 Sep 2013	12 Sep 2013	25 Sep 2013	18 Sep 2013	23 Sep 2013	19 Sep 2013

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP02-0.0	SE120709.002	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP03-0.0	SE120709.003	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP04-0.0	SE120709.004	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP05-0.0	SE120709.005	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP06-0.0	SE120709.006	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP07-0.0	SE120709.007	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP08-0.0	SE120709.008	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP09-0.0	SE120709.009	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP10-0.0	SE120709.010	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP11-0.0	SE120709.011	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP12-0.0	SE120709.012	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP13-0.0	SE120709.013	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP14-0.0	SE120709.014	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP15-0.0	SE120709.015	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP18-0.0	SE120709.018	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP19-0.0	SE120709.019	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-0.5	SE120709.022	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

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

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP22-0.5	SE120709.031	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-1.0	SE120709.032	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 111	SE120709.038	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 112	SE120709.039	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044908	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 105	SE120709.036	LB044908	10 Sep 2013	12 Sep 2013	17 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 109	SE120709.037	LB044908	11 Sep 2013	12 Sep 2013	18 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP02-0.0	SE120709.002	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP03-0.0	SE120709.003	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP04-0.0	SE120709.004	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP05-0.0	SE120709.005	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP06-0.0	SE120709.006	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP07-0.0	SE120709.007	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP08-0.0	SE120709.008	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP09-0.0	SE120709.009	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP10-0.0	SE120709.010	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP11-0.0	SE120709.011	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP12-0.0	SE120709.012	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP13-0.0	SE120709.013	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP14-0.0	SE120709.014	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP15-0.0	SE120709.015	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP16-0.0	SE120709.016	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP17-0.0	SE120709.017	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP18-0.0	SE120709.018	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP19-0.0	SE120709.019	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP21-0.5	SE120709.020	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP21-1.0	SE120709.021	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP23-0.5	SE120709.022	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP25-0.5	SE120709.029	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP25-2.0	SE120709.030	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP22-0.5	SE120709.031	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP22-1.0	SE120709.032	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 111	SE120709.038	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 112	SE120709.039	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP28-2.0	SE120709.042	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044908	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 105	SE120709.036	LB044908	10 Sep 2013	12 Sep 2013	17 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 109	SE120709.037	LB044908	11 Sep 2013	12 Sep 2013	18 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP02-0.0	SE120709.002	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP03-0.0	SE120709.003	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP04-0.0	SE120709.004	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP05-0.0	SE120709.005	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP06-0.0	SE120709.006	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP07-0.0	SE120709.007	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP08-0.0	SE120709.008	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP09-0.0	SE120709.009	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP10-0.0	SE120709.010	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP11-0.0	SE120709.011	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP12-0.0	SE120709.012	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP13-0.0	SE120709.013	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP14-0.0	SE120709.014	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP15-0.0	SE120709.015	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP18-0.0	SE120709.018	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP19-0.0	SE120709.019	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-0.5	SE120709.022	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP25-0.5	SE120709.029	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP25-2.0	SE120709.030	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP22-0.5	SE120709.031	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP22-1.0	SE120709.032	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 111	SE120709.038	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 112	SE120709.039	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
TP28-2.0	SE120709.042	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044908	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 105	SE120709.036	LB044908	10 Sep 2013	12 Sep 2013	17 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 109	SE120709.037	LB044908	11 Sep 2013	12 Sep 2013	18 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP02-0.0	SE120709.002	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP03-0.0	SE120709.003	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP04-0.0	SE120709.004	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP05-0.0	SE120709.005	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP06-0.0	SE120709.006	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP07-0.0	SE120709.007	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP08-0.0	SE120709.008	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP09-0.0	SE120709.009	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP10-0.0	SE120709.010	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP11-0.0	SE120709.011	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP12-0.0	SE120709.012	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP13-0.0	SE120709.013	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP14-0.0	SE120709.014	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP15-0.0	SE120709.015	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP18-0.0	SE120709.018	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP19-0.0	SE120709.019	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

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

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

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

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP23-0.5	SE120709.022	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-0.5	SE120709.031	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-1.0	SE120709.032	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 111	SE120709.038	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 112	SE120709.039	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

PCBs in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044908	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 105	SE120709.036	LB044908	10 Sep 2013	12 Sep 2013	17 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 109	SE120709.037	LB044908	11 Sep 2013	12 Sep 2013	18 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP23-0.5	SE120709.022	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
QC 111	SE120709.038	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB045103	11 Sep 2013	12 Sep 2013	25 Sep 2013	19 Sep 2013	25 Sep 2013	19 Sep 2013

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044854	09 Sep 2013	12 Sep 2013	07 Oct 2013	16 Sep 2013	07 Oct 2013	16 Sep 2013
QC 105	SE120709.036	LB044854	10 Sep 2013	12 Sep 2013	08 Oct 2013	16 Sep 2013	08 Oct 2013	16 Sep 2013
QC 109	SE120709.037	LB044854	11 Sep 2013	12 Sep 2013	09 Oct 2013	16 Sep 2013	09 Oct 2013	16 Sep 2013

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB044930	10 Sep 2013	12 Sep 2013	09 Mar 2014	17 Sep 2013	09 Mar 2014	19 Sep 2013
TP02-0.0	SE120709.002	LB044930	10 Sep 2013	12 Sep 2013	09 Mar 2014	17 Sep 2013	09 Mar 2014	19 Sep 2013
TP03-0.0	SE120709.003	LB044930	10 Sep 2013	12 Sep 2013	09 Mar 2014	17 Sep 2013	09 Mar 2014	19 Sep 2013
TP04-0.0	SE120709.004	LB044930	10 Sep 2013	12 Sep 2013	09 Mar 2014	17 Sep 2013	09 Mar 2014	19 Sep 2013
TP05-0.0	SE120709.005	LB044930	09 Sep 2013	12 Sep 2013	08 Mar 2014	17 Sep 2013	08 Mar 2014	19 Sep 2013
TP06-0.0	SE120709.006	LB044930	09 Sep 2013	12 Sep 2013	08 Mar 2014	17 Sep 2013	08 Mar 2014	19 Sep 2013
TP07-0.0	SE120709.007	LB044930	09 Sep 2013	12 Sep 2013	08 Mar 2014	17 Sep 2013	08 Mar 2014	19 Sep 2013
TP08-0.0	SE120709.008	LB044930	09 Sep 2013	12 Sep 2013	08 Mar 2014	17 Sep 2013	08 Mar 2014	19 Sep 2013
TP09-0.0	SE120709.009	LB044930	09 Sep 2013	12 Sep 2013	08 Mar 2014	17 Sep 2013	08 Mar 2014	19 Sep 2013
TP10-0.0	SE120709.010	LB044995	10 Sep 2013	12 Sep 2013	09 Mar 2014	18 Sep 2013	09 Mar 2014	19 Sep 2013
TP11-0.0	SE120709.011	LB044995	10 Sep 2013	12 Sep 2013	09 Mar 2014	18 Sep 2013	09 Mar 2014	19 Sep 2013
TP12-0.0	SE120709.012	LB044995	10 Sep 2013	12 Sep 2013	09 Mar 2014	18 Sep 2013	09 Mar 2014	19 Sep 2013
TP13-0.0	SE120709.013	LB044995	10 Sep 2013	12 Sep 2013	09 Mar 2014	18 Sep 2013	09 Mar 2014	19 Sep 2013
TP14-0.0	SE120709.014	LB044995	09 Sep 2013	12 Sep 2013	08 Mar 2014	18 Sep 2013	08 Mar 2014	19 Sep 2013
TP15-0.0	SE120709.015	LB044995	09 Sep 2013	12 Sep 2013	08 Mar 2014	18 Sep 2013	08 Mar 2014	19 Sep 2013
TP16-0.0	SE120709.016	LB044995	09 Sep 2013	12 Sep 2013	08 Mar 2014	18 Sep 2013	08 Mar 2014	19 Sep 2013
TP17-0.0	SE120709.017	LB044995	09 Sep 2013	12 Sep 2013	08 Mar 2014	18 Sep 2013	08 Mar 2014	19 Sep 2013
TP18-0.0	SE120709.018	LB044995	10 Sep 2013	12 Sep 2013	09 Mar 2014	18 Sep 2013	09 Mar 2014	19 Sep 2013
TP21-0.5	SE120709.020	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013

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

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

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

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP21-1.0	SE120709.021	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP23-0.5	SE120709.022	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP23-2.0	SE120709.023	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP24-0.0	SE120709.024	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP26-0.5	SE120709.025	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP26-2.0	SE120709.026	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP27-0.0	SE120709.027	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP28-0.5	SE120709.028	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP25-0.5	SE120709.029	LB044995	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP25-2.0	SE120709.030	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP22-0.5	SE120709.031	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP22-1.0	SE120709.032	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP20-0.0	SE120709.033	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP20-0.5	SE120709.034	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
QC 111	SE120709.038	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
QC 112	SE120709.039	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013
TP28-2.0	SE120709.042	LB044996	11 Sep 2013	12 Sep 2013	10 Mar 2014	18 Sep 2013	10 Mar 2014	19 Sep 2013

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044860	09 Sep 2013	12 Sep 2013	08 Mar 2014	16 Sep 2013	08 Mar 2014	17 Sep 2013
QC 105	SE120709.036	LB044860	10 Sep 2013	12 Sep 2013	09 Mar 2014	16 Sep 2013	09 Mar 2014	17 Sep 2013
QC 109	SE120709.037	LB044860	11 Sep 2013	12 Sep 2013	10 Mar 2014	16 Sep 2013	10 Mar 2014	17 Sep 2013

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP01-0.0	SE120709.001	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP02-0.0	SE120709.002	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP03-0.0	SE120709.003	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP04-0.0	SE120709.004	LB044915	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP05-0.0	SE120709.005	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP06-0.0	SE120709.006	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP07-0.0	SE120709.007	LB044915	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP08-0.0	SE120709.008	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP09-0.0	SE120709.009	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP10-0.0	SE120709.010	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP11-0.0	SE120709.011	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP12-0.0	SE120709.012	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP13-0.0	SE120709.013	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP14-0.0	SE120709.014	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP15-0.0	SE120709.015	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB044916	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP18-0.0	SE120709.018	LB044916	10 Sep 2013	12 Sep 2013	24 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP19-0.0	SE120709.019	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-0.5	SE120709.022	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB044916	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-0.5	SE120709.031	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-1.0	SE120709.032	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 111	SE120709.038	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 112	SE120709.039	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB044917	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

HOLDING TIME SUMMARY

SE120709 R0

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

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

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

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB044908	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 105	SE120709.036	LB044908	10 Sep 2013	12 Sep 2013	17 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 109	SE120709.037	LB044908	11 Sep 2013	12 Sep 2013	18 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP15-0.0	SE120709.015	LB044824	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB044824	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB044824	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP19-0.0	SE120709.019	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-0.5	SE120709.022	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-0.5	SE120709.031	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-1.0	SE120709.032	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 111	SE120709.038	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 112	SE120709.039	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
Trip Spike	SE120709.041	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB045062	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 105	SE120709.036	LB045062	10 Sep 2013	12 Sep 2013	17 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 109	SE120709.037	LB045062	11 Sep 2013	12 Sep 2013	18 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
Trip Blank	SE120709.040	LB045062	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP15-0.0	SE120709.015	LB044824	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP16-0.0	SE120709.016	LB044824	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP17-0.0	SE120709.017	LB044824	09 Sep 2013	12 Sep 2013	23 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP19-0.0	SE120709.019	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-0.5	SE120709.020	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP21-1.0	SE120709.021	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-0.5	SE120709.022	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP23-2.0	SE120709.023	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP24-0.0	SE120709.024	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-0.5	SE120709.025	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP26-2.0	SE120709.026	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP27-0.0	SE120709.027	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-0.5	SE120709.028	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-0.5	SE120709.029	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP25-2.0	SE120709.030	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-0.5	SE120709.031	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP22-1.0	SE120709.032	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 111	SE120709.038	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
QC 112	SE120709.039	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
Trip Spike	SE120709.041	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013
TP28-2.0	SE120709.042	LB044824	11 Sep 2013	12 Sep 2013	25 Sep 2013	16 Sep 2013	26 Oct 2013	19 Sep 2013

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref

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

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

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

Volatile Petroleum Hydrocarbons in Water (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC 101	SE120709.035	LB045062	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 105	SE120709.036	LB045062	10 Sep 2013	12 Sep 2013	17 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
QC 109	SE120709.037	LB045062	11 Sep 2013	12 Sep 2013	18 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013
Trip Blank	SE120709.040	LB045062	09 Sep 2013	12 Sep 2013	16 Sep 2013	16 Sep 2013	26 Oct 2013	20 Sep 2013

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

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

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	TP01-0.0	SE120709.001	%	60 - 130%	101
	TP02-0.0	SE120709.002	%	60 - 130%	105
	TP03-0.0	SE120709.003	%	60 - 130%	123
	TP04-0.0	SE120709.004	%	60 - 130%	109
	TP05-0.0	SE120709.005	%	60 - 130%	101
	TP06-0.0	SE120709.006	%	60 - 130%	101
	TP07-0.0	SE120709.007	%	60 - 130%	105
	TP08-0.0	SE120709.008	%	60 - 130%	109
	TP09-0.0	SE120709.009	%	60 - 130%	107
	TP10-0.0	SE120709.010	%	60 - 130%	109
	TP11-0.0	SE120709.011	%	60 - 130%	113
	TP12-0.0	SE120709.012	%	60 - 130%	107
	TP13-0.0	SE120709.013	%	60 - 130%	105
	TP14-0.0	SE120709.014	%	60 - 130%	102
	TP18-0.0	SE120709.018	%	60 - 130%	111
	TP23-0.5	SE120709.022	%	60 - 130%	75
	TP23-2.0	SE120709.023	%	60 - 130%	99
	TP24-0.0	SE120709.024	%	60 - 130%	108
	TP26-0.5	SE120709.025	%	60 - 130%	95
	TP26-2.0	SE120709.026	%	60 - 130%	111
	TP27-0.0	SE120709.027	%	60 - 130%	107
	TP28-0.5	SE120709.028	%	60 - 130%	108
	TP25-0.5	SE120709.029	%	60 - 130%	113
	TP25-2.0	SE120709.030	%	60 - 130%	107
	QC 111	SE120709.038	%	60 - 130%	115
	TP28-2.0	SE120709.042	%	60 - 130%	118

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	QC 101	SE120709.035	%	40 - 130%	68
	QC 105	SE120709.036	%	40 - 130%	71
	QC 109	SE120709.037	%	40 - 130%	68

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	TP01-0.0	SE120709.001	%	60 - 130%	106
	TP02-0.0	SE120709.002	%	60 - 130%	108
	TP03-0.0	SE120709.003	%	60 - 130%	120
	TP04-0.0	SE120709.004	%	60 - 130%	104
	TP05-0.0	SE120709.005	%	60 - 130%	110
	TP06-0.0	SE120709.006	%	60 - 130%	112
	TP07-0.0	SE120709.007	%	60 - 130%	110
	TP08-0.0	SE120709.008	%	60 - 130%	102
	TP09-0.0	SE120709.009	%	60 - 130%	110
	TP10-0.0	SE120709.010	%	60 - 130%	102
	TP11-0.0	SE120709.011	%	60 - 130%	120
	TP12-0.0	SE120709.012	%	60 - 130%	112
	TP13-0.0	SE120709.013	%	60 - 130%	106
	TP14-0.0	SE120709.014	%	60 - 130%	104
	TP18-0.0	SE120709.018	%	60 - 130%	100
	TP23-0.5	SE120709.022	%	60 - 130%	92
	TP23-2.0	SE120709.023	%	60 - 130%	86
	TP24-0.0	SE120709.024	%	60 - 130%	88
	TP26-0.5	SE120709.025	%	60 - 130%	92
	TP26-2.0	SE120709.026	%	60 - 130%	102
	TP27-0.0	SE120709.027	%	60 - 130%	90
	TP28-0.5	SE120709.028	%	60 - 130%	102
	TP25-0.5	SE120709.029	%	60 - 130%	96
	TP25-2.0	SE120709.030	%	60 - 130%	106
	QC 111	SE120709.038	%	60 - 130%	94
	TP28-2.0	SE120709.042	%	60 - 130%	92
d14-p-terphenyl (Surrogate)	TP01-0.0	SE120709.001	%	60 - 130%	108

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

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

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	TP02-0.0	SE120709.002	%	60 - 130%	112
	TP03-0.0	SE120709.003	%	60 - 130%	122
	TP04-0.0	SE120709.004	%	60 - 130%	110
	TP05-0.0	SE120709.005	%	60 - 130%	116
	TP06-0.0	SE120709.006	%	60 - 130%	116
	TP07-0.0	SE120709.007	%	60 - 130%	118
	TP08-0.0	SE120709.008	%	60 - 130%	106
	TP09-0.0	SE120709.009	%	60 - 130%	114
	TP10-0.0	SE120709.010	%	60 - 130%	104
	TP11-0.0	SE120709.011	%	60 - 130%	126
	TP12-0.0	SE120709.012	%	60 - 130%	116
	TP13-0.0	SE120709.013	%	60 - 130%	110
	TP14-0.0	SE120709.014	%	60 - 130%	108
	TP18-0.0	SE120709.018	%	60 - 130%	104
	TP23-0.5	SE120709.022	%	60 - 130%	112
	TP23-2.0	SE120709.023	%	60 - 130%	106
	TP24-0.0	SE120709.024	%	60 - 130%	110
	TP26-0.5	SE120709.025	%	60 - 130%	114
	TP26-2.0	SE120709.026	%	60 - 130%	112
	TP27-0.0	SE120709.027	%	60 - 130%	108
	TP28-0.5	SE120709.028	%	60 - 130%	108
	TP25-0.5	SE120709.029	%	60 - 130%	104
	TP25-2.0	SE120709.030	%	60 - 130%	114
	QC 111	SE120709.038	%	60 - 130%	102
	TP28-2.0	SE120709.042	%	60 - 130%	116

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QC 101	SE120709.035	%	40 - 130%	88
	QC 105	SE120709.036	%	40 - 130%	96
	QC 109	SE120709.037	%	40 - 130%	104
d14-p-terphenyl (Surrogate)	QC 101	SE120709.035	%	40 - 130%	116
	QC 105	SE120709.036	%	40 - 130%	124
	QC 109	SE120709.037	%	40 - 130%	120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	92
	TP16-0.0	SE120709.016	%	60 - 130%	92
	TP17-0.0	SE120709.017	%	60 - 130%	92
	TP19-0.0	SE120709.019	%	60 - 130%	86
	TP21-0.5	SE120709.020	%	60 - 130%	90
	TP21-1.0	SE120709.021	%	60 - 130%	90
	TP23-0.5	SE120709.022	%	60 - 130%	92
	TP23-2.0	SE120709.023	%	60 - 130%	86
	TP24-0.0	SE120709.024	%	60 - 130%	88
	TP26-0.5	SE120709.025	%	60 - 130%	92
	TP26-2.0	SE120709.026	%	60 - 130%	102
	TP27-0.0	SE120709.027	%	60 - 130%	90
	TP28-0.5	SE120709.028	%	60 - 130%	102
	TP25-0.5	SE120709.029	%	60 - 130%	96
	TP25-2.0	SE120709.030	%	60 - 130%	106
	TP22-0.5	SE120709.031	%	60 - 130%	98
	TP22-1.0	SE120709.032	%	60 - 130%	86
	QC 111	SE120709.038	%	60 - 130%	94
	QC 112	SE120709.039	%	60 - 130%	92
	TP28-2.0	SE120709.042	%	60 - 130%	92
d14-p-terphenyl (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	108
	TP16-0.0	SE120709.016	%	60 - 130%	116
	TP17-0.0	SE120709.017	%	60 - 130%	108
	TP19-0.0	SE120709.019	%	60 - 130%	112
	TP21-0.5	SE120709.020	%	60 - 130%	106

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	TP21-1.0	SE120709.021	%	60 - 130%	106
	TP23-0.5	SE120709.022	%	60 - 130%	112
	TP23-2.0	SE120709.023	%	60 - 130%	106
	TP24-0.0	SE120709.024	%	60 - 130%	110
	TP26-0.5	SE120709.025	%	60 - 130%	114
	TP26-2.0	SE120709.026	%	60 - 130%	112
	TP27-0.0	SE120709.027	%	60 - 130%	108
	TP28-0.5	SE120709.028	%	60 - 130%	108
	TP25-0.5	SE120709.029	%	60 - 130%	104
	TP25-2.0	SE120709.030	%	60 - 130%	114
	TP22-0.5	SE120709.031	%	60 - 130%	110
	TP22-1.0	SE120709.032	%	60 - 130%	104
	QC 111	SE120709.038	%	60 - 130%	102
	QC 112	SE120709.039	%	60 - 130%	104
	TP28-2.0	SE120709.042	%	60 - 130%	116
d5-nitrobenzene (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	94
	TP16-0.0	SE120709.016	%	60 - 130%	98
	TP17-0.0	SE120709.017	%	60 - 130%	96
	TP19-0.0	SE120709.019	%	60 - 130%	92
	TP21-0.5	SE120709.020	%	60 - 130%	92
	TP21-1.0	SE120709.021	%	60 - 130%	92
	TP23-0.5	SE120709.022	%	60 - 130%	94
	TP23-2.0	SE120709.023	%	60 - 130%	86
	TP24-0.0	SE120709.024	%	60 - 130%	90
	TP26-0.5	SE120709.025	%	60 - 130%	88
	TP26-2.0	SE120709.026	%	60 - 130%	94
	TP27-0.0	SE120709.027	%	60 - 130%	94
	TP28-0.5	SE120709.028	%	60 - 130%	98
	TP25-0.5	SE120709.029	%	60 - 130%	102
	TP25-2.0	SE120709.030	%	60 - 130%	106
	TP22-0.5	SE120709.031	%	60 - 130%	90
	TP22-1.0	SE120709.032	%	60 - 130%	84
	QC 111	SE120709.038	%	60 - 130%	94
	QC 112	SE120709.039	%	60 - 130%	88
	TP28-2.0	SE120709.042	%	60 - 130%	92

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QC 101	SE120709.035	%	40 - 130%	88
	QC 105	SE120709.036	%	40 - 130%	96
	QC 109	SE120709.037	%	40 - 130%	104
d14-p-terphenyl (Surrogate)	QC 101	SE120709.035	%	40 - 130%	116
	QC 105	SE120709.036	%	40 - 130%	124
	QC 109	SE120709.037	%	40 - 130%	120
d5-nitrobenzene (Surrogate)	QC 101	SE120709.035	%	40 - 130%	76
	QC 105	SE120709.036	%	40 - 130%	84
	QC 109	SE120709.037	%	40 - 130%	96

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	TP23-0.5	SE120709.022	%	60 - 130%	75
	TP23-2.0	SE120709.023	%	60 - 130%	99
	TP24-0.0	SE120709.024	%	60 - 130%	108
	TP26-0.5	SE120709.025	%	60 - 130%	95
	TP26-2.0	SE120709.026	%	60 - 130%	111
	TP27-0.0	SE120709.027	%	60 - 130%	107
	TP28-0.5	SE120709.028	%	60 - 130%	108
	TP25-0.5	SE120709.029	%	60 - 130%	113
	TP25-2.0	SE120709.030	%	60 - 130%	107
	QC 111	SE120709.038	%	60 - 130%	115
	TP28-2.0	SE120709.042	%	60 - 130%	118

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

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

PCBs in Water

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (Surrogate)	QC 101	SE120709.035	%	40 - 130%	68
	QC 105	SE120709.036	%	40 - 130%	71
	QC 109	SE120709.037	%	40 - 130%	68

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	103
	TP16-0.0	SE120709.016	%	60 - 130%	96
	TP17-0.0	SE120709.017	%	60 - 130%	109
	TP19-0.0	SE120709.019	%	60 - 130%	106
	TP21-0.5	SE120709.020	%	60 - 130%	100
	TP21-1.0	SE120709.021	%	60 - 130%	94
	TP23-0.5	SE120709.022	%	60 - 130%	92
	TP23-2.0	SE120709.023	%	60 - 130%	104
	TP24-0.0	SE120709.024	%	60 - 130%	97
	TP26-0.5	SE120709.025	%	60 - 130%	116
	TP26-2.0	SE120709.026	%	60 - 130%	109
	TP27-0.0	SE120709.027	%	60 - 130%	111
	TP28-0.5	SE120709.028	%	60 - 130%	111
	TP25-0.5	SE120709.029	%	60 - 130%	100
	TP25-2.0	SE120709.030	%	60 - 130%	99
	TP22-0.5	SE120709.031	%	60 - 130%	96
	TP22-1.0	SE120709.032	%	60 - 130%	103
	QC 111	SE120709.038	%	60 - 130%	118
	QC 112	SE120709.039	%	60 - 130%	103
	Trip Spike	SE120709.041	%	60 - 130%	107
	TP28-2.0	SE120709.042	%	60 - 130%	88
d4-1,2-dichloroethane (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	82
	TP16-0.0	SE120709.016	%	60 - 130%	85
	TP17-0.0	SE120709.017	%	60 - 130%	105
	TP19-0.0	SE120709.019	%	60 - 130%	91
	TP21-0.5	SE120709.020	%	60 - 130%	86
	TP21-1.0	SE120709.021	%	60 - 130%	87
	TP23-0.5	SE120709.022	%	60 - 130%	80
	TP23-2.0	SE120709.023	%	60 - 130%	91
	TP24-0.0	SE120709.024	%	60 - 130%	95
	TP26-0.5	SE120709.025	%	60 - 130%	107
	TP26-2.0	SE120709.026	%	60 - 130%	105
	TP27-0.0	SE120709.027	%	60 - 130%	106
	TP28-0.5	SE120709.028	%	60 - 130%	103
	TP25-0.5	SE120709.029	%	60 - 130%	102
	TP25-2.0	SE120709.030	%	60 - 130%	98
	TP22-0.5	SE120709.031	%	60 - 130%	100
	TP22-1.0	SE120709.032	%	60 - 130%	101
	QC 111	SE120709.038	%	60 - 130%	116
	QC 112	SE120709.039	%	60 - 130%	108
	Trip Spike	SE120709.041	%	60 - 130%	105
	TP28-2.0	SE120709.042	%	60 - 130%	90
d8-toluene (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	84
	TP16-0.0	SE120709.016	%	60 - 130%	85
	TP17-0.0	SE120709.017	%	60 - 130%	108
	TP19-0.0	SE120709.019	%	60 - 130%	88
	TP21-0.5	SE120709.020	%	60 - 130%	84
	TP21-1.0	SE120709.021	%	60 - 130%	85
	TP23-0.5	SE120709.022	%	60 - 130%	80
	TP23-2.0	SE120709.023	%	60 - 130%	90
	TP24-0.0	SE120709.024	%	60 - 130%	93
	TP26-0.5	SE120709.025	%	60 - 130%	101
	TP26-2.0	SE120709.026	%	60 - 130%	102
	TP27-0.0	SE120709.027	%	60 - 130%	103
	TP28-0.5	SE120709.028	%	60 - 130%	101

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

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

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	TP25-0.5	SE120709.029	%	60 - 130%	96
	TP25-2.0	SE120709.030	%	60 - 130%	95
	TP22-0.5	SE120709.031	%	60 - 130%	95
	TP22-1.0	SE120709.032	%	60 - 130%	99
	QC 111	SE120709.038	%	60 - 130%	115
	QC 112	SE120709.039	%	60 - 130%	104
	Trip Spike	SE120709.041	%	60 - 130%	105
	TP28-2.0	SE120709.042	%	60 - 130%	85
Dibromofluoromethane (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	74
	TP16-0.0	SE120709.016	%	60 - 130%	74
	TP17-0.0	SE120709.017	%	60 - 130%	93
	TP19-0.0	SE120709.019	%	60 - 130%	76
	TP21-0.5	SE120709.020	%	60 - 130%	71
	TP21-1.0	SE120709.021	%	60 - 130%	71
	TP23-0.5	SE120709.022	%	60 - 130%	70
	TP23-2.0	SE120709.023	%	60 - 130%	73
	TP24-0.0	SE120709.024	%	60 - 130%	78
	TP26-0.5	SE120709.025	%	60 - 130%	86
	TP26-2.0	SE120709.026	%	60 - 130%	85
	TP27-0.0	SE120709.027	%	60 - 130%	86
	TP28-0.5	SE120709.028	%	60 - 130%	79
	TP25-0.5	SE120709.029	%	60 - 130%	80
	TP25-2.0	SE120709.030	%	60 - 130%	77
	TP22-0.5	SE120709.031	%	60 - 130%	77
	TP22-1.0	SE120709.032	%	60 - 130%	77
	QC 111	SE120709.038	%	60 - 130%	90
	QC 112	SE120709.039	%	60 - 130%	82
	Trip Spike	SE120709.041	%	60 - 130%	80
	TP28-2.0	SE120709.042	%	60 - 130%	71

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QC 101	SE120709.035	%	40 - 130%	100
	QC 105	SE120709.036	%	40 - 130%	99
	QC 109	SE120709.037	%	40 - 130%	100
	Trip Blank	SE120709.040	%	40 - 130%	100
d4-1,2-dichloroethane (Surrogate)	QC 101	SE120709.035	%	40 - 130%	111
	QC 105	SE120709.036	%	40 - 130%	115
	QC 109	SE120709.037	%	40 - 130%	115
	Trip Blank	SE120709.040	%	40 - 130%	117
d8-toluene (Surrogate)	QC 101	SE120709.035	%	40 - 130%	106
	QC 105	SE120709.036	%	40 - 130%	108
	QC 109	SE120709.037	%	40 - 130%	106
	Trip Blank	SE120709.040	%	40 - 130%	106
Dibromofluoromethane (Surrogate)	QC 101	SE120709.035	%	40 - 130%	103
	QC 105	SE120709.036	%	40 - 130%	106
	QC 109	SE120709.037	%	40 - 130%	106
	Trip Blank	SE120709.040	%	40 - 130%	107

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	103
	TP16-0.0	SE120709.016	%	60 - 130%	96
	TP17-0.0	SE120709.017	%	60 - 130%	109
	TP19-0.0	SE120709.019	%	60 - 130%	106
	TP21-0.5	SE120709.020	%	60 - 130%	100
	TP21-1.0	SE120709.021	%	60 - 130%	94
	TP23-0.5	SE120709.022	%	60 - 130%	92
	TP23-2.0	SE120709.023	%	60 - 130%	104
	TP24-0.0	SE120709.024	%	60 - 130%	97
	TP26-0.5	SE120709.025	%	60 - 130%	116
	TP26-2.0	SE120709.026	%	60 - 130%	109

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

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

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433/AN434/AN410**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP27-0.0	SE120709.027	%	60 - 130%	111
	TP28-0.5	SE120709.028	%	60 - 130%	111
	TP25-0.5	SE120709.029	%	60 - 130%	100
	TP25-2.0	SE120709.030	%	60 - 130%	99
	TP22-0.5	SE120709.031	%	60 - 130%	96
	TP22-1.0	SE120709.032	%	60 - 130%	103
	QC 111	SE120709.038	%	60 - 130%	118
	QC 112	SE120709.039	%	60 - 130%	103
	TP28-2.0	SE120709.042	%	60 - 130%	88
d4-1,2-dichloroethane (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	82
	TP16-0.0	SE120709.016	%	60 - 130%	85
	TP17-0.0	SE120709.017	%	60 - 130%	105
	TP19-0.0	SE120709.019	%	60 - 130%	91
	TP21-0.5	SE120709.020	%	60 - 130%	86
	TP21-1.0	SE120709.021	%	60 - 130%	87
	TP23-0.5	SE120709.022	%	60 - 130%	80
	TP23-2.0	SE120709.023	%	60 - 130%	91
	TP24-0.0	SE120709.024	%	60 - 130%	95
	TP26-0.5	SE120709.025	%	60 - 130%	107
	TP26-2.0	SE120709.026	%	60 - 130%	105
	TP27-0.0	SE120709.027	%	60 - 130%	106
	TP28-0.5	SE120709.028	%	60 - 130%	103
	TP25-0.5	SE120709.029	%	60 - 130%	102
	TP25-2.0	SE120709.030	%	60 - 130%	98
	TP22-0.5	SE120709.031	%	60 - 130%	100
	TP22-1.0	SE120709.032	%	60 - 130%	101
	QC 111	SE120709.038	%	60 - 130%	116
	QC 112	SE120709.039	%	60 - 130%	108
	TP28-2.0	SE120709.042	%	60 - 130%	90
d8-toluene (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	84
	TP16-0.0	SE120709.016	%	60 - 130%	85
	TP17-0.0	SE120709.017	%	60 - 130%	108
	TP19-0.0	SE120709.019	%	60 - 130%	88
	TP21-0.5	SE120709.020	%	60 - 130%	84
	TP21-1.0	SE120709.021	%	60 - 130%	85
	TP23-0.5	SE120709.022	%	60 - 130%	80
	TP23-2.0	SE120709.023	%	60 - 130%	90
	TP24-0.0	SE120709.024	%	60 - 130%	93
	TP26-0.5	SE120709.025	%	60 - 130%	101
	TP26-2.0	SE120709.026	%	60 - 130%	102
	TP27-0.0	SE120709.027	%	60 - 130%	103
	TP28-0.5	SE120709.028	%	60 - 130%	101
	TP25-0.5	SE120709.029	%	60 - 130%	96
	TP25-2.0	SE120709.030	%	60 - 130%	95
	TP22-0.5	SE120709.031	%	60 - 130%	95
	TP22-1.0	SE120709.032	%	60 - 130%	99
	QC 111	SE120709.038	%	60 - 130%	115
	QC 112	SE120709.039	%	60 - 130%	104
	TP28-2.0	SE120709.042	%	60 - 130%	85
Dibromofluoromethane (Surrogate)	TP15-0.0	SE120709.015	%	60 - 130%	74
	TP16-0.0	SE120709.016	%	60 - 130%	74
	TP17-0.0	SE120709.017	%	60 - 130%	93
	TP19-0.0	SE120709.019	%	60 - 130%	76
	TP21-0.5	SE120709.020	%	60 - 130%	71
	TP21-1.0	SE120709.021	%	60 - 130%	71
	TP23-0.5	SE120709.022	%	60 - 130%	70
	TP23-2.0	SE120709.023	%	60 - 130%	73
	TP24-0.0	SE120709.024	%	60 - 130%	78
	TP26-0.5	SE120709.025	%	60 - 130%	86
	TP26-2.0	SE120709.026	%	60 - 130%	85
	TP27-0.0	SE120709.027	%	60 - 130%	86

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

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

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	TP28-0.5	SE120709.028	%	60 - 130%	79
	TP25-0.5	SE120709.029	%	60 - 130%	80
	TP25-2.0	SE120709.030	%	60 - 130%	77
	TP22-0.5	SE120709.031	%	60 - 130%	77
	TP22-1.0	SE120709.032	%	60 - 130%	77
	QC 111	SE120709.038	%	60 - 130%	90
	QC 112	SE120709.039	%	60 - 130%	82
	TP28-2.0	SE120709.042	%	60 - 130%	71

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QC 101	SE120709.035	%	60 - 130%	100
	QC 105	SE120709.036	%	60 - 130%	99
	QC 109	SE120709.037	%	60 - 130%	100
	Trip Blank	SE120709.040	%	60 - 130%	100
d4-1,2-dichloroethane (Surrogate)	QC 101	SE120709.035	%	60 - 130%	111
	QC 105	SE120709.036	%	60 - 130%	115
	QC 109	SE120709.037	%	60 - 130%	115
	Trip Blank	SE120709.040	%	60 - 130%	117
d8-toluene (Surrogate)	QC 101	SE120709.035	%	60 - 130%	106
	QC 105	SE120709.036	%	60 - 130%	108
	QC 109	SE120709.037	%	60 - 130%	106
	Trip Blank	SE120709.040	%	60 - 130%	106
Dibromofluoromethane (Surrogate)	QC 101	SE120709.035	%	60 - 130%	103
	QC 105	SE120709.036	%	60 - 130%	106
	QC 109	SE120709.037	%	60 - 130%	106
	Trip Blank	SE120709.040	%	60 - 130%	107

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

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

Hexavalent Chromium in Soil UV/Vis

Method: ME-(AU)-[ENV]AN075/AN201

Sample Number	Parameter	Units	LOR	Result
LB045093.001	Hexavalent Chromium, Cr6+	mg/kg	0.5	<0.5
LB045094.001	Hexavalent Chromium, Cr6+	mg/kg	0.5	<0.5

Hexavalent Chromium in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN283

Sample Number	Parameter	Units	LOR	Result
LB044812.001	Hexavalent Chromium, Cr6+	mg/L	0.005	<0.005

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311/AN312

Sample Number	Parameter	Units	LOR	Result
LB045071.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB044936.001	Mercury	mg/kg	0.01	<0.01
LB044998.001	Mercury	mg/kg	0.01	<0.01
LB045000.001	Mercury	mg/kg	0.01	<0.01

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB044915.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	96
LB044916.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB044916.001		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101
LB044917.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	110

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB044908.001		Alpha BHC	µg/L	0.1	<0.1
		Hexachlorobenzene (HCB)	µg/L	0.1	<0.1
		Beta BHC	µg/L	0.1	<0.1
		Lindane (gamma BHC)	µg/L	0.1	<0.1
		Delta BHC	µg/L	0.1	<0.1
		Heptachlor	µg/L	0.1	<0.1
		Aldrin	µg/L	0.1	<0.1
		Heptachlor epoxide	µg/L	0.1	<0.1
		Gamma Chlordane	µg/L	0.1	<0.1
		Alpha Chlordane	µg/L	0.1	<0.1
		Alpha Endosulfan	µg/L	0.1	<0.1
		p,p'-DDE	µg/L	0.1	<0.1
		Dieldrin	µg/L	0.1	<0.1
		Endrin	µg/L	0.1	<0.1
		Beta Endosulfan	µg/L	0.1	<0.1
		p,p'-DDD	µg/L	0.1	<0.1
		Endosulfan sulphate	µg/L	0.1	<0.1
		p,p'-DDT	µg/L	0.1	<0.1
		Endrin ketone	µg/L	0.1	<0.1
		Methoxychlor	µg/L	0.1	<0.1
		Endrin aldehyde	µg/L	0.1	<0.1
		Isodrin	µg/L	0.1	<0.1
		Mirex	µg/L	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	88

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

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

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB044915.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	106
		d14-p-terphenyl (Surrogate)	%	-	106
LB044916.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	112
		d14-p-terphenyl (Surrogate)	%	-	118
LB044917.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	100

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB044908.001		Dichlorvos	µg/L	0.5	<0.5
		Dimethoate	µg/L	0.5	<0.5
		Diazinon (Dimpylate)	µg/L	0.5	<0.5
		Fenitrothion	µg/L	0.2	<0.2
		Malathion	µg/L	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
		Parathion-ethyl (Parathion)	µg/L	0.2	<0.2
		Bromophos Ethyl	µg/L	0.2	<0.2
		Methidathion	µg/L	0.5	<0.5
		Ethion	µg/L	0.2	<0.2
		Azinphos-methyl	µg/L	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	77
		d14-p-terphenyl (Surrogate)	%	-	104

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB044916.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB044916.001		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	112
		2-fluorobiphenyl (Surrogate)	%	-	110
		d14-p-terphenyl (Surrogate)	%	-	118
LB044917.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	98
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	100

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB044908.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(a&h)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	80
		2-fluorobiphenyl (Surrogate)	%	-	86
		d14-p-terphenyl (Surrogate)	%	-	82

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR

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

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

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB044916.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101
LB044917.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	109

PCBs in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB044908.001	Arochlor 1016	µg/L	1	<1
	Arochlor 1221	µg/L	1	<1
	Arochlor 1232	µg/L	1	<1
	Arochlor 1242	µg/L	1	<1
	Arochlor 1248	µg/L	1	<1
	Arochlor 1254	µg/L	1	<1
	Arochlor 1260	µg/L	1	<1
	Arochlor 1262	µg/L	1	<1
	Arochlor 1268	µg/L	1	<1

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB045103.001	Total Phenols	mg/kg	0.1	<0.1

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB044854.001	Total Phenols	mg/L	0.01	<0.01

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result
LB044930.001	Arsenic, As	mg/kg	3	<3
	Beryllium, Be	mg/kg	0.3	<0.3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Cobalt, Co	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	0.3	<0.3
	Nickel, Ni	mg/kg	0.5	<0.5
	Selenium, Se	mg/kg	2	<2
	Zinc, Zn	mg/kg	0.5	<0.5
LB044995.001	Arsenic, As	mg/kg	3	<3
	Beryllium, Be	mg/kg	0.3	<0.3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Cobalt, Co	mg/kg	0.3	<0.3

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

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

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB044995.001	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	0.3	<0.3
	Nickel, Ni	mg/kg	0.5	<0.5
	Selenium, Se	mg/kg	2	<2
	Zinc, Zn	mg/kg	0.5	<0.5
LB044996.001	Arsenic, As	mg/kg	3	<1
	Beryllium, Be	mg/kg	0.3	-4.0368E-006
	Cadmium, Cd	mg/kg	0.3	<0.3
	Cobalt, Co	mg/kg	0.3	0.004328825
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	0.3	0.13921525
	Nickel, Ni	mg/kg	0.5	<0.5
	Selenium, Se	mg/kg	2	0.20826925
	Zinc, Zn	mg/kg	0.5	<2.0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB044860.001	Arsenic, As	µg/L	1	<1
	Beryllium, Be	µg/L	1	<1
	Boron, B	µg/L	5	<5
	Cadmium, Cd	µg/L	0.1	<0.1
	Cobalt, Co	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Manganese, Mn	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Selenium, Se	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB044916.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110
LB044917.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB044908.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB044824.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	76
		d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	90
		Bromofluorobenzene (Surrogate)	%	-	110

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

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

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB044824.001	Totals	Total BTEX*	mg/kg	0.6	<0.6

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB045062.001	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5
	Hydrocarbons	Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	93
		d4-1,2-dichloroethane (Surrogate)	%	-	103
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	102

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB044824.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	76
		d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	90

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB045062.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	93
		d4-1,2-dichloroethane (Surrogate)	%	-	103
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	102

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

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

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

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

Hexavalent Chromium in Soil UV/Vis

Method: ME-(AU)-[ENV]AN075/AN201

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.001	LB045093.004	Hexavalent Chromium, Cr6+	mg/kg	0.5	<0.5	<0.5	200	0
SE120709.011	LB045093.016	Hexavalent Chromium, Cr6+	mg/kg	0.5	<0.5	<0.5	200	0
SE120709.020	LB045093.026	Hexavalent Chromium, Cr6+	mg/kg	0.5	<0.5	<0.5	200	0
SE120709.030	LB045094.013	Hexavalent Chromium, Cr6+	mg/kg	0.5	<0.5	<0.5	200	0

Hexavalent Chromium in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN283

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120683.001	LB044812.004	Hexavalent Chromium, Cr6+	mg/L	0.005	<0.005	<0.005	174	0

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120765.002	LB045071.015	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120708.011	LB044936.014	Mercury	mg/kg	0.01	0.006024239	7 0.0052803424	200	0
SE120709.009	LB044936.024	Mercury	mg/kg	0.01	0.02	0.02	94	8
SE120709.020	LB044998.014	Mercury	mg/kg	0.01	0.02	0.02	83	11
SE120709.029	LB044998.024	Mercury	mg/kg	0.01	0.03	0.02	70	3
SE120734.001	LB045000.014	Mercury	mg/kg	0.01	<0.01	<0.01	148	0
SE120734.003	LB045000.017	Mercury	mg/kg	0.01	0.01	<0.01	141	4

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120708.001	LB044915.009		Hexachlorobenzene (HCB)	mg/kg	0.1	0	0	200	0
			Alpha BHC	mg/kg	0.1	0	0	200	0
			Lindane	mg/kg	0.1	0	0	200	0
			Heptachlor	mg/kg	0.1	0	0	200	0
			Aldrin	mg/kg	0.1	0	0	200	0
			Beta BHC	mg/kg	0.1	0	0	200	0
			Delta BHC	mg/kg	0.1	0	0	200	0
			Heptachlor epoxide	mg/kg	0.1	0	0	200	0
			o,p'-DDE	mg/kg	0.1	0	0	200	0
			Alpha Endosulfan	mg/kg	0.2	0	0	200	0
			Gamma Chlordane	mg/kg	0.1	0	0	200	0
			Alpha Chlordane	mg/kg	0.1	0	0	200	0
			trans-Nonachlor	mg/kg	0.1	0	0	200	0
			p,p'-DDE	mg/kg	0.1	0	0	200	0
			Dieldrin	mg/kg	0.2	0	0	200	0
			Endrin	mg/kg	0.2	0	0	200	0
			o,p'-DDD	mg/kg	0.1	0	0	200	0
			o,p'-DDT	mg/kg	0.1	0	0	200	0
			Beta Endosulfan	mg/kg	0.2	0	0	200	0
			p,p'-DDD	mg/kg	0.1	0	0	200	0
			p,p'-DDT	mg/kg	0.1	0	0	200	0
			Endosulfan sulphate	mg/kg	0.1	0	0	200	0
			Endrin Aldehyde	mg/kg	0.1	0	0	200	0
			Methoxychlor	mg/kg	0.1	0	0	200	0
			Endrin Ketone	mg/kg	0.1	0	0	200	0
			Isodrin	mg/kg	0.1	0	0	200	0
			Mirex	mg/kg	0.1	0	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.103	0.101	30	2
SE120709.004	LB044915.022		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.004	LB044915.022		Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	4
SE120709.008	LB044916.004		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	4
SE120709.025	LB044916.023		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.025	LB044916.023		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	9
SE120709.029	LB044917.005		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	2

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120708.001	LB044915.011		Dichlorvos	mg/kg	0.5	0	0	200	0
			Dimethoate	mg/kg	0.5	0	0	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	0	0	200	0
			Fenitrothion	mg/kg	0.2	0	0	200	0
			Malathion	mg/kg	0.2	0	0	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	0	0	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	0	0	200	0
			Bromophos Ethyl	mg/kg	0.2	0	0	200	0
			Methidathion	mg/kg	0.5	0	0	200	0
			Ethion	mg/kg	0.2	0	0	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	0	0	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.52	0.53	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.55	0.54	30	2

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

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

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

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

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.004	LB044915.022		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	2
SE120709.008	LB044916.004		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
SE120709.023	LB044916.021		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
SE120709.028	LB044917.004		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.023	LB044916.020	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.023	LB044916.020		Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
			Carcinogenic PAHs (as BaP TEQ)*	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
SE120709.028	LB044917.004		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0.1	200	10
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
			Carcinogenic PAHs (as BaP TEQ)*	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	4
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.025	LB044916.021		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	9
SE120709.029	LB044917.005		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0

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

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

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

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

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.029	LB044917.005		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	2

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.042	LB045103.016	Total Phenols	mg/kg	0.1	<0.1	<0.1	200	0

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.035	LB044854.004	Total Phenols	mg/L	0.01	<0.01	<0.01	131	0

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120708.011	LB044930.014	Arsenic, As	mg/kg	3	2.83537095952	2.5057126147	142	12
		Cadmium, Cd	mg/kg	0.3	0.064383036	60.0899082160	200	0
		Copper, Cu	mg/kg	0.5	6.11250852276	.0031056119	38	2
		Lead, Pb	mg/kg	1	9.23729166669	.8732704583	40	7
		Nickel, Ni	mg/kg	0.5	3.27226609843	.2985345203	45	1
		Zinc, Zn	mg/kg	0.5	25.6343292297	25.643094972	38	0
SE120709.009	LB044930.024	Arsenic, As	mg/kg	3	6	9	70	37
		Beryllium, Be	mg/kg	0.3	0.5	0.5	125	0
		Boron, B	mg/kg	5	<5	<5	200	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Cobalt, Co	mg/kg	0.3	6.7	6.8	37	2
		Copper, Cu	mg/kg	0.5	11	12	34	6
		Lead, Pb	mg/kg	1	52	58	32	10
		Manganese, Mn	mg/kg	0.3	410	380	30	8
		Nickel, Ni	mg/kg	0.5	7.9	8.3	36	4
		Selenium, Se	mg/kg	2	<2	<2	200	0
		Zinc, Zn	mg/kg	0.5	75	74	33	1
SE120709.020	LB044995.014	Arsenic, As	mg/kg	3	5	5	95	4
		Beryllium, Be	mg/kg	0.3	0.6	0.5	123	11
		Boron, B	mg/kg	5	<5	<5	200	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Cobalt, Co	mg/kg	0.3	5.5	5.2	39	6
		Copper, Cu	mg/kg	0.5	30	20	32	41 ⑧
		Lead, Pb	mg/kg	1	34	32	33	5
		Manganese, Mn	mg/kg	0.3	350	310	30	14
		Nickel, Ni	mg/kg	0.5	12	15	34	23
		Selenium, Se	mg/kg	2	<2	<2	200	0
		Zinc, Zn	mg/kg	0.5	93	91	32	1
SE120709.029	LB044995.024	Arsenic, As	mg/kg	3	12	13	54	9
		Beryllium, Be	mg/kg	0.3	0.7	0.7	99	7
		Boron, B	mg/kg	5	<5	<5	200	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Cobalt, Co	mg/kg	0.3	12	13	34	14
		Copper, Cu	mg/kg	0.5	21	22	32	1
		Lead, Pb	mg/kg	1	31	33	33	6
		Manganese, Mn	mg/kg	0.3	720	580	30	21
		Nickel, Ni	mg/kg	0.5	22	21	32	2
		Selenium, Se	mg/kg	2	<2	<2	200	0
		Zinc, Zn	mg/kg	0.5	74	69	33	7
SE120734.003	LB044996.019	Arsenic, As	mg/kg	3	10	10	59	5
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	153	0
		Copper, Cu	mg/kg	0.5	14	21	33	38 ②

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

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

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

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

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120734.003	LB044996.019	Lead, Pb	mg/kg	1	18	17	36	1
		Nickel, Ni	mg/kg	0.5	6.1	4.6	39	28
		Zinc, Zn	mg/kg	0.5	15	15	44	2

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.037	LB044860.007	Arsenic, As	µg/L	1	<1	<1	200	0
		Beryllium, Be	µg/L	1	<1	<1	200	0
		Boron, B	µg/L	5	<5	<5	128	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Cobalt, Co	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Manganese, Mn	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Selenium, Se	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	7	<5	128	28

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.023	LB044916.019		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE120709.028	LB044917.004		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.025	LB044824.015	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	4.4	50	3
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.4	5.4	50	1
			d8-toluene (Surrogate)	mg/kg	-	5.1	5.2	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.8	5.6	50	4
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.035	LB045062.009	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	<0.5	200	0
			Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	200	0
			o-xylene	µg/L	0.5	<0.5	<0.5	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	<0.5	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	0.0	0.0	30	1

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

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

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

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

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.035	LB045062.009	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	0.0	0.0	30	0
			d8-toluene (Surrogate)	µg/L	-	0.0	0.0	30	0
			Bromofluorobenzene (Surrogate)	µg/L	-	0.0	0.0	30	2

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.025	LB044824.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	4.4	30	3
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.4	5.4	30	1
			d8-toluene (Surrogate)	mg/kg	-	5.1	5.2	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.8	5.6	30	4
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE120709.035	LB045062.009		TRH C6-C10	µg/L	50	<50	<50	200	0
			TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	0.0	0.0	30	1
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	0.0	0.0	30	0
			d8-toluene (Surrogate)	µg/L	-	0.0	0.0	30	0
			Bromofluorobenzene (Surrogate)	µg/L	-	0.0	0.0	30	2
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	<0.5	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	200	0

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

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

Hexavalent Chromium in Soil UV/Vis

Method: ME-(AU)-[ENV]AN075/AN201

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB045093.002	Hexavalent Chromium, Cr6+	mg/kg	0.5	20	20	70 - 130	99
LB045094.002	Hexavalent Chromium, Cr6+	mg/kg	0.5	20	20	70 - 130	102

Hexavalent Chromium in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN283

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044812.002	Hexavalent Chromium, Cr6+	mg/L	0.005	0.054	0.05	80 - 120	108

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044936.002	Mercury	mg/kg	0.01	0.23	0.2	70 - 130	113
LB044998.002	Mercury	mg/kg	0.01	0.22	0.2	70 - 130	109
LB045000.002	Mercury	mg/kg	0.01	0.22	0.2	70 - 130	110

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044915.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	110
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	106
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	98
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	98
	Endrin	mg/kg	0.2	0.2	0.2	60 - 140	114
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	96
LB044916.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	111
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	106
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	99
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	98
	Endrin	mg/kg	0.2	0.2	0.2	60 - 140	113
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	90
LB044917.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	114
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	112
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	103
	Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	107
	Endrin	mg/kg	0.2	0.2	0.2	60 - 140	113
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	98

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044908.002	Delta BHC	µg/L	0.1	0.2	0.2	60 - 140	83
	Heptachlor	µg/L	0.1	0.2	0.2	60 - 140	94
	Aldrin	µg/L	0.1	0.2	0.2	60 - 140	90
	Dieldrin	µg/L	0.1	0.2	0.2	60 - 140	84
	Endrin	µg/L	0.1	0.2	0.2	60 - 140	101
	p,p'-DDT	µg/L	0.1	0.2	0.2	60 - 140	86

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044915.002		Dichlorvos	mg/kg	0.5	2.5	2	60 - 140	124
		Diazinon (Dimpylate)	mg/kg	0.5	2.1	2	60 - 140	107
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.3	2	60 - 140	115
		Ethion	mg/kg	0.2	2.7	2	60 - 140	133
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 140	100
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.5	40 - 140	112
LB044916.002		Dichlorvos	mg/kg	0.5	2.0	2	60 - 140	98
		Diazinon (Dimpylate)	mg/kg	0.5	1.6	2	60 - 140	78
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	2	60 - 140	94
		Ethion	mg/kg	0.2	1.7	2	60 - 140	84
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 140	90
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.5	40 - 140	110
LB044917.002		Dichlorvos	mg/kg	0.5	1.9	2	60 - 140	94
		Diazinon (Dimpylate)	mg/kg	0.5	1.6	2	60 - 140	82
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.6	2	60 - 140	82

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

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

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044917.002		Ethion	mg/kg	0.2	1.6	2	60 - 140	80
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 140	98
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 140	96

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044908.002	Dichlorvos	µg/L	0.5	<0.5	0.4	60 - 140	112
	Diazinon (Dimpylate)	µg/L	0.5	<0.5	0.4	60 - 140	100
	Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	0.4	0.4	60 - 140	94
	Ethion	µg/L	0.2	0.4	0.4	60 - 140	106

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044916.002		Naphthalene	mg/kg	0.1	4.2	4	60 - 140	104
		Acenaphthylene	mg/kg	0.1	4.3	4	60 - 140	106
		Acenaphthene	mg/kg	0.1	4.2	4	60 - 140	106
		Phenanthrene	mg/kg	0.1	4.4	4	60 - 140	110
		Anthracene	mg/kg	0.1	4.4	4	60 - 140	110
		Fluoranthene	mg/kg	0.1	4.3	4	60 - 140	109
		Pyrene	mg/kg	0.1	4.3	4	60 - 140	106
		Benzo(a)pyrene	mg/kg	0.1	4.3	4	60 - 140	108
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	60 - 140	88
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	60 - 140	88
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	60 - 140	94
LB044917.002		Naphthalene	mg/kg	0.1	4.4	4	60 - 140	111
		Acenaphthylene	mg/kg	0.1	4.8	4	60 - 140	121
		Acenaphthene	mg/kg	0.1	4.6	4	60 - 140	114
		Phenanthrene	mg/kg	0.1	4.9	4	60 - 140	122
		Anthracene	mg/kg	0.1	5.0	4	60 - 140	125
		Fluoranthene	mg/kg	0.1	4.7	4	60 - 140	117
		Pyrene	mg/kg	0.1	4.9	4	60 - 140	123
		Benzo(a)pyrene	mg/kg	0.1	4.6	4	60 - 140	114
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	60 - 140	94
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	60 - 140	98
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	60 - 140	96

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044908.002	Naphthalene	µg/L	0.1	45	40	60 - 140	114
	Acenaphthylene	µg/L	0.1	47	40	60 - 140	118
	Acenaphthene	µg/L	0.1	48	40	60 - 140	121
	Phenanthrene	µg/L	0.1	47	40	60 - 140	118
	Anthracene	µg/L	0.1	46	40	60 - 140	116
	Fluoranthene	µg/L	0.1	49	40	60 - 140	121
	Pyrene	µg/L	0.1	47	40	60 - 140	117
	Benzo(a)pyrene	µg/L	0.1	50	40	60 - 140	124

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044916.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	107
LB044917.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	112

PCBs in Water

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044908.002	Arochlor 1260	µg/L	1	<1	0.4	60 - 140	101

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB045103.002	Total Phenols	mg/kg	0.1	2.5	2.5	70 - 130	100

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

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

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044854.002	Total Phenols	mg/L	0.01	0.24	0.25	80 - 120	97

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044930.002	Arsenic, As	mg/kg	3	51	50	80 - 120	101
	Beryllium, Be	mg/kg	0.3	47	50	80 - 120	94
	Boron, B	mg/kg	5	47	50	80 - 120	93
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	102
	Cobalt, Co	mg/kg	0.3	50	50	80 - 120	101
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	101
	Lead, Pb	mg/kg	1	51	50	80 - 120	101
	Manganese, Mn	mg/kg	0.3	52	50	80 - 120	104
	Nickel, Ni	mg/kg	0.5	52	50	80 - 120	103
	Selenium, Se	mg/kg	2	46	50	80 - 120	92
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	103
LB044995.002	Arsenic, As	mg/kg	3	48	50	80 - 120	96
	Beryllium, Be	mg/kg	0.3	45	50	80 - 120	90
	Boron, B	mg/kg	5	47	50	80 - 120	93
	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	97
	Cobalt, Co	mg/kg	0.3	48	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	48	50	80 - 120	96
	Lead, Pb	mg/kg	1	48	50	80 - 120	96
	Manganese, Mn	mg/kg	0.3	50	50	80 - 120	100
	Nickel, Ni	mg/kg	0.5	50	50	80 - 120	99
	Selenium, Se	mg/kg	2	44	50	80 - 120	88
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	98
LB044996.002	Arsenic, As	mg/kg	3	47	50	80 - 120	93
	Beryllium, Be	mg/kg	0.3	43.64625	50	80 - 120	87
	Boron, B	mg/kg	5	51.2525	50	80 - 120	103
	Cadmium, Cd	mg/kg	0.3	47	50	80 - 120	95
	Cobalt, Co	mg/kg	0.3	47.209	50	80 - 120	94
	Copper, Cu	mg/kg	0.5	47	50	80 - 120	94
	Lead, Pb	mg/kg	1	47	50	80 - 120	94
	Manganese, Mn	mg/kg	0.3	48.204	50	80 - 120	96
	Nickel, Ni	mg/kg	0.5	48	50	80 - 120	96
	Selenium, Se	mg/kg	2	42.55875	50	80 - 120	85
	Zinc, Zn	mg/kg	0.5	48	50	80 - 120	96

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044860.002	Arsenic, As	µg/L	1	19	20	80 - 120	94
	Beryllium, Be	µg/L	1	20	20	80 - 120	99
	Boron, B	µg/L	5	16	20	80 - 120	82
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	100
	Cobalt, Co	µg/L	1	19	20	80 - 120	96
	Copper, Cu	µg/L	1	19	20	80 - 120	96
	Lead, Pb	µg/L	1	20	20	80 - 120	101
	Manganese, Mn	µg/L	1	20	20	80 - 120	101
	Nickel, Ni	µg/L	1	19	20	80 - 120	97
	Selenium, Se	µg/L	1	19	20	80 - 120	97
	Zinc, Zn	µg/L	5	20	20	80 - 120	101

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044916.002		TRH C10-C14	mg/kg	20	41	40	60 - 140	103
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	103
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	98
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	41	40	60 - 140	103
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	103
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	90

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044917.002		TRH C10-C14	mg/kg	20	42	40	60 - 140	105
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	103
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	90
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	42	40	60 - 140	105
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	103
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	90

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044908.002		TRH C10-C14	µg/L	50	1000	1200	60 - 140	86
		TRH C15-C28	µg/L	200	1100	1200	60 - 140	92
		TRH C29-C36	µg/L	200	1000	1200	60 - 140	87
	TRH F Bands	TRH >C10-C16 (F2)	µg/L	60	1100	1200	60 - 140	88
		TRH >C16-C34 (F3)	µg/L	500	1100	1200	60 - 140	93
		TRH >C34-C40 (F4)	µg/L	500	520	600	60 - 140	86

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044824.002	Monocyclic	Benzene	mg/kg	0.1	2.1	2.9	60 - 140	72
	Aromatic	Toluene	mg/kg	0.1	1.9	2.9	60 - 140	67
		Ethylbenzene	mg/kg	0.1	2.1	2.9	60 - 140	71
		m/p-xylene	mg/kg	0.2	4.1	5.8	60 - 140	71
		o-xylene	mg/kg	0.1	2.1	2.9	60 - 140	73
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.6	5	60 - 140	72
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	85
		d8-toluene (Surrogate)	mg/kg	-	4.5	5	60 - 140	90
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.6	5	60 - 140	112

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB045062.002	Monocyclic	Benzene	µg/L	0.5	47	45.45	60 - 140	104
	Aromatic	Toluene	µg/L	0.5	47	45.45	60 - 140	104
		Ethylbenzene	µg/L	0.5	48	45.45	60 - 140	106
		m/p-xylene	µg/L	1	95	90.9	60 - 140	104
		o-xylene	µg/L	0.5	48	45.45	60 - 140	105

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB044824.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	85
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.6	5	60 - 140	72
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	85
		d8-toluene (Surrogate)	mg/kg	-	4.5	5	60 - 140	90
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.6	5	60 - 140	112
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	138

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB045062.002		TRH C6-C10	µg/L	50	1100	946.63	60 - 140	117
		TRH C6-C9	µg/L	40	870	818.71	60 - 140	106
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	820	639.67	60 - 140	129

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

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

Hexavalent Chromium in Soil UV/Vis

Method: ME-(AU)-[ENV]AN075/AN201

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.002	LB045093.006	Hexavalent Chromium, Cr6+	mg/kg	0.5	16	<0.5	20	78
SE120709.012	LB045093.018	Hexavalent Chromium, Cr6+	mg/kg	0.5	10	<0.5	20	52 ④
SE120709.042	LB045094.021	Hexavalent Chromium, Cr6+	mg/kg	0.5	16	<0.5	20	80

Hexavalent Chromium in water by Discrete Analyser

Method: ME-(AU)-[ENV]AN283

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.037	LB044812.011	Hexavalent Chromium, Cr6+	mg/L	0.005	0.049	<0.005	0.05	94
SE120718.001	LB044812.013	Hexavalent Chromium, Cr6+	mg/L	0.005	0.051	<0.005	0.05	96

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120683.001	LB045071.006	Mercury	mg/L	0.0001	0.0081	<0.0001	0.008	101

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120705.004	LB044936.004	Mercury	mg/kg	0.01	0.19	<0.01	0.2	93
SE120709.010	LB044998.004	Mercury	mg/kg	0.01	0.22	0.03	0.2	94
SE120709.030	LB045000.004	Mercury	mg/kg	0.01	0.24	0.04	0.2	101

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120708.003	LB044915.012		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	-	-
			Alpha BHC	mg/kg	0.1	<0.1	0	-	-
			Lindane	mg/kg	0.1	<0.1	0	-	-
			Heptachlor	mg/kg	0.1	0.2	0	0.2	112
			Aldrin	mg/kg	0.1	0.2	0	0.2	107
			Beta BHC	mg/kg	0.1	<0.1	0	-	-
			Delta BHC	mg/kg	0.1	0.2	0	0.2	100
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	0	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	0	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	0	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	0	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	0	-	-
			Dieldrin	mg/kg	0.2	<0.2	0	0.2	98
			Endrin	mg/kg	0.2	0.2	0	0.2	114
			o,p'-DDD	mg/kg	0.1	<0.1	0	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	0	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	0	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	0	-	-
			p,p'-DDT	mg/kg	0.1	0.2	0	0.2	96
			Endosulfan sulphate	mg/kg	0.1	<0.1	0	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	0	-	-
			Methoxychlor	mg/kg	0.1	<0.1	0	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	0	-	-
			Isodrin	mg/kg	0.1	<0.1	0	-	-
			Mirex	mg/kg	0.1	<0.1	0	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.1	-	100
SE120709.009	LB044916.006		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	117
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	108
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	103
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.009	LB044916.006		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha 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	0.2	0.2	<0.2	0.2	101
			Endrin	mg/kg	0.2	0.2	<0.2	0.2	118
			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	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	97
			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	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	107

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120708.004	LB044915.015		Dichlorvos	mg/kg	0.5	2.5	0	2	124
			Dimethoate	mg/kg	0.5	<0.5	0	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	2.4	0	2	120
			Fenitrothion	mg/kg	0.2	<0.2	0	-	-
			Malathion	mg/kg	0.2	<0.2	0	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.3	0	2	117
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	0	-	-
			Methidathion	mg/kg	0.5	<0.5	0	-	-
			Ethion	mg/kg	0.2	2.2	0	2	110
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.52	0.5	102
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.52	0.5	98
SE120709.022	LB044916.019		Dichlorvos	mg/kg	0.5	2.0	<0.5	2	101
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	1.7	<0.5	2	84
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.7	<0.2	2	85
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	1.6	<0.2	2	81
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	0.5	86
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.6	0.5	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.022	LB044916.018	Naphthalene	mg/kg	0.1	4.7	<0.1	4	117
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.9	<0.1	4	122
		Acenaphthene	mg/kg	0.1	4.9	<0.1	4	121
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	5.0	<0.1	4	126
		Anthracene	mg/kg	0.1	5.0	<0.1	4	126
		Fluoranthene	mg/kg	0.1	5.0	<0.1	4	125
		Pyrene	mg/kg	0.1	4.8	<0.1	4	121
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.022	LB044916.018		Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.5	<0.1	4	113
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Total PAH	mg/kg	0.8	39	<0.8	-	-
			Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	4.5	<0.2	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	-	86
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	86
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.6	-	90

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.022	LB045103.004	Total Phenols	mg/kg	0.1	2.9	0.1	2.5	110

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120745.001	LB044854.009	Total Phenols	mg/L	0.01	0.25	0.01	0.25	93

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120705.004	LB044930.004	Arsenic, As	mg/kg	3	40	<3	50	77
		Cadmium, Cd	mg/kg	0.3	43	<0.3	50	85
		Copper, Cu	mg/kg	0.5	50	6.7	50	87
		Lead, Pb	mg/kg	1	48	7	50	82
		Nickel, Ni	mg/kg	0.5	52	5.5	50	92
		Zinc, Zn	mg/kg	0.5	54	7.2	50	94
SE120709.010	LB044995.004	Arsenic, As	mg/kg	3	42	4	50	76
		Beryllium, Be	mg/kg	0.3	2.5	0.8	2.5	69 ④
		Boron, B	mg/kg	5	7	<5	10	72
		Cadmium, Cd	mg/kg	0.3	42	<0.3	50	85
		Cobalt, Co	mg/kg	0.3	55	18	50	74
		Copper, Cu	mg/kg	0.5	60	23	50	73
		Lead, Pb	mg/kg	1	82	62	50	40 ④
		Manganese, Mn	mg/kg	0.3	1200	1500	50	-616 ⑤
		Nickel, Ni	mg/kg	0.5	50	9.0	50	82
		Selenium, Se	mg/kg	2	7	<2	10	68 ④
		Zinc, Zn	mg/kg	0.5	73	34	50	76
SE120709.030	LB044996.004	Arsenic, As	mg/kg	3	50	10	50	79
		Beryllium, Be	mg/kg	0.3	2.64396313364	0.8	2.5	73
		Boron, B	mg/kg	5	12.6751843317	7	10	56 ④
		Cadmium, Cd	mg/kg	0.3	40	<0.3	50	79
		Cobalt, Co	mg/kg	0.3	30.6619815668	13	50	76
		Copper, Cu	mg/kg	0.5	61	20	50	83
		Lead, Pb	mg/kg	1	70	32	50	76
		Manganese, Mn	mg/kg	0.3	76.3894009216	640	50	-125 ⑤
		Nickel, Ni	mg/kg	0.5	61	24	50	75
		Selenium, Se	mg/kg	2	6.73546082949	<2	10	64 ④
		Zinc, Zn	mg/kg	0.5	120	79	50	75

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.035	LB044860.004	Arsenic, As	µg/L	1	19	<1	20	96
		Beryllium, Be	µg/L	1	21	<1	20	103
		Boron, B	µg/L	5	16	<5	20	102
		Cadmium, Cd	µg/L	0.1	20	<0.1	20	100

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

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

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.035	LB044860.004	Cobalt, Co	µg/L	1	19	<1	20	94
		Copper, Cu	µg/L	1	19	<1	20	96
		Lead, Pb	µg/L	1	20	<1	20	99
		Manganese, Mn	µg/L	1	20	<1	20	99
		Nickel, Ni	µg/L	1	19	<1	20	94
		Selenium, Se	µg/L	1	20	<1	20	100
		Zinc, Zn	µg/L	5	24	<5	20	100

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.015	LB044824.004	Monocyclic	Benzene	mg/kg	0.1	2.6	<0.1	2.9	88
		Aromatic	Toluene	mg/kg	0.1	2.4	<0.1	2.9	82
			Ethylbenzene	mg/kg	0.1	2.8	<0.1	2.9	95
			m/p-xylene	mg/kg	0.2	5.6	<0.2	5.8	96
			o-xylene	mg/kg	0.1	2.9	<0.1	2.9	99
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	3.7	5	91
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	4.1	5	102
			d8-toluene (Surrogate)	mg/kg	-	5.2	4.2	5	104
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.4	5.2	5	128
		Totals	Total Xylenes*	mg/kg	0.3	8.4	<0.3	-	-
			Total BTEX*	mg/kg	0.6	16	<0.6	-	-
SE120709.042	LB044824.026	Monocyclic	Benzene	mg/kg	0.1	2.3	<0.1	2.9	80
		Aromatic	Toluene	mg/kg	0.1	2.3	<0.1	2.9	80
			Ethylbenzene	mg/kg	0.1	2.3	<0.1	2.9	78
			m/p-xylene	mg/kg	0.2	4.6	<0.2	5.8	79
			o-xylene	mg/kg	0.1	2.3	<0.1	2.9	80
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	3.5	5	85
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	4.5	5	114
			d8-toluene (Surrogate)	mg/kg	-	5.3	4.2	5	106
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.8	4.4	5	115
		Totals	Total Xylenes*	mg/kg	0.3	6.9	<0.3	-	-
			Total BTEX*	mg/kg	0.6	14	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE120709.015	LB044824.005		TRH C6-C10	mg/kg	25	<25	<25	24.65	91
			TRH C6-C9	mg/kg	20	21	<20	23.2	92
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	3.7	5	91
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	4.1	5	102
			d8-toluene (Surrogate)	mg/kg	-	5.2	4.2	5	104
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.4	5.2	5	128
		VPH F	Benzene (F0)	mg/kg	0.1	2.6	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	87
SE120709.042	LB044824.026		TRH C6-C10	mg/kg	25	<25	<25	24.65	88
			TRH C6-C9	mg/kg	20	22	<20	23.2	93
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	3.5	5	85
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	4.5	5	114
			d8-toluene (Surrogate)	mg/kg	-	5.3	4.2	5	106
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.8	4.4	5	115
		VPH F	Benzene (F0)	mg/kg	0.1	2.3	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	109

MATRIX SPIKE DUPLICATES

SE120709 R0

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here:
http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-11.pdf

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

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

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

CoC received 12/9/13 @ 3:25pm

0304

CHAIN OF CUSTODY FORM

1/10

SMEC OFFICE: Canberra	TURNAROUND REQUIREMENTS: [X] Standard – 5 day TAT		LAB: SGS Australia
PROJECT: CCB	[ ] Non Standard TAT (List due date):		ATTENTION:
PROJECT NUMBER: 3002369	LAB QUOTE NO: ENVI-2A568E	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.):
PROJECT MANAGER: Nathalie O'toole	CONTACT PH: 6234 1967	COC: (1) 2 3 4 5 6 7	16/33 Maddox St
SAMPLED BY: John O'Brien		OF: 1 2 3 4 5 6 7	Alexandria NSW 2015
DATE SAMPLED:	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Email reports to (will default to PM if blank):	DATE/TIME: 11/9/2013	DATE/TIME:	DATE/TIME:	DATE/TIME: 12/9/13 10
Email invoice to (will default to PM if blank):				

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	13 Metals NEPM	OCP/OPP				
1	TP01-0.0	10/9/13	S	JAR	1				X	X				
	TP01-0.5	10/9/13	S	"	1	X								
	TP01-1.0	10/9/13	S	"	1	X								
2	TP02-0.0	10/9/13	"	"	1				X	X				
	TP02-0.5	10/9/13	"	"	1	X								
	TP02-1.0	10/9/13	"	"	1	X								
	TP02-1.3	10/9/13	"	"	1	X								
	TP02-2.0	10/9/13	"	"	1	X								
3	TP03-0.0	10/9/13	"	"	1				X	X				
	TP03-0.5	10/9/13	"	"	1	X								
	TP03-1.0	10/9/13	"	"	1	X								
					TOTAL 11	8			3	3				

SGS
Received 12, 9, 13
By EA
Time 10:00 am/pm
Samples intact yes/no
Ice/Cooler Pack yes/no
Temperature on Receipt 3 °C
Storage Location 6758-295, W092
SGS REF No SE130709 A

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

0309

CHAIN OF CUSTODY FORM

6/10

SMEC OFFICE: CANBERRA	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: DCB			ATTENTION:
PROJECT NUMBER: 30023609	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: NATHANIE .C TOOLE	CONTACT PH: 02 6201 1907	COC: 1 2 3 4 5 (6) 7	ALEXANDRIA NSW 2015
SAMPLED BY: JOHN O'BRIEN		OF: 1 2 3 4 5 6 7	
DATE SAMPLED:	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:
Email reports to (will default to PM if blank): nathanie.ctoole@smec.com	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if blank): AS ABOVE			RECEIVED BY: DATE/TIME: 9/9/13 10:40

Special Laboratory Instructions:

SAMPLE DETAILS						ANALYSIS REQUIRED								COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Metals	TRH	BTEX	OCP/OPP	13 Metals NEPM	PAH	Explosive Suite		
	TP17 -1.0	9/9/2013	S	JAR	1	X								
18	TP18 - 0.0	10/9/2013	|	|	1	|	|	|	X	X	|	|	|	|
	TP18 - 0.5	↓	|	|	1	X	|	|	|	|	|	|	|	|
	TP18 - 1.0	↓	|	|	1	X	|	|	|	|	|	|	|	|
19	TP19 - 0.0	10/9/2013	|	|	1	|	X	X	|	|	X	X	|	|
	TP19 - 0.5	|	|	|	1	X	|	|	|	|	|	|	|	|
	TP19 - 1.0	|	|	|	1	X	|	|	|	|	|	|	|	|
	TP21 - 0.0	|	|	|	1	|	|	|	|	|	|	|	|	|
20	TP21 - 0.5	|	|	|	1	|	X	X	|	X	X	|	|	|
21	TP21 - 1.0	|	|	|	1	|	X	X	|	X	X	|	|	|
	TP23 - 0.0	↓	↓	↓	1	X	|	|	|	|	|	|	|	|
					TOTAL 11	6	3	3	1	3	3	1		

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

0313

CHAIN OF CUSTODY FORM 10/10

SMEC

SMEC OFFICE: Canberra	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):		LAB: SGS AUSTRALIA
PROJECT: OCB			ATTENTION:
PROJECT NUMBER: 3001209	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.):
PROJECT MANAGER: Natalie Orpin	CONTACT PH: 02 6201 7107	COC: 1 2 3 4 5 6 7	16/33 MADDOX ST.
SAMPLED BY: Jack Cleary		OF: 1 2 3 4 5 6 7	ALEXANDRIA NSW 2015
DATE SAMPLED: Multiple (Refer Sample Table)	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:
Email reports to (will default to PM if blank): [illegible]	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if blank): [illegible]			RECEIVED BY: DATE/TIME: 11/9/13

Special Laboratory Instructions: * Please FWD QC110 + QC113 to EuroFins Sydney, Chilled Condition

SAMPLE DETAILS						ANALYSIS REQUIRED									COMMENTS	
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	PAH	PCB	13 Metals Nepm	Phenols	OCP/OPP	Asbestos	TRH silica gel	Explosive Soils
	QC 108	10/9/2013	S	JAR	1	X										
37	QC 109	11/9/2013	W		4		X	X	X	X	X	X	X			X
*	QC 110	11/9/2013			1		X	X	X	X	X	X	X	X			*
38	QC 111	11/9/2013			1		X	X	X	X	X	X	X	X		
39	QC 112	11/9/2013			1		X	X	X		X			X		
*	QC 113	11/9/2013	↓	↓	1		X	X	X		X			X			*
40	Trip Blank	9/9/2013	W	Vial	2			X							X	
41	Trip Spike	11/9/2013	S	Vial	1		X	X								
	TP27 -1.0	10/9/2013	S	Jar	1	X										
	TP28 -1.0	11/9/13	S	Jar	1	X										
42	TP28 -2.0	11/9/13	S	Jar	1		X	X	X	X	X	X	X	X		
					TOTAL	3	7	8	6	4	6	4	4	5	1	1

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

86 on hold

0313

CHAIN OF CUSTODY FORM 10/10

SMEC

SMEC OFFICE:	TURNAROUND REQUIREMENTS: ☒ Standard – 5 day TAT ☐ Non Standard TAT (List due date):	LAB: SGS AUSTRALIA	
PROJECT: QC13		ATTENTION:	
PROJECT NUMBER: 3001309	LAB QUOTE NO:	COC SEQUENCE NUMBER (Circle)	DISPATCH TO (ADDRESS & PHONE NO.): 16/33 MADDOX ST.
PROJECT MANAGER: KATRINA O'TOOLE	CONTACT PH: 6234 1767	COC: 1 2 3 4 5 6 7	ALEXANDRIA NSW 2015
SAMPLED BY: [illegible]		OF: 1 2 3 4 5 6 7	
DATE SAMPLED: [illegible]	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
Email reports to (will default to PM if blank): [illegible]	DATE/TIME:	DATE/TIME:	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if blank): [illegible]			

Special Laboratory Instructions: * Please FWD QC110 + QC113 to Eurofins Sydney, Chilled Condition

SAMPLE DETAILS						ANALYSIS REQUIRED									COMMENTS		
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	Hold	TRH	BTEX	PAH	PCB	13 metals Nepm	Phenols	OCP/OPP	Asbestos	TRH C6-C10	Explosive Soils	
	QC 108	10/9/2013	S	JAR	1	X											
	QC 109	11/9/2013	W		4		X	X	X	X	X	X	X			X	
*	QC 110	11/9/2013			1		X	X	X	X	X	X	X	X			*
	QC 111	11/9/2013			1		X	X	X	X	X	X	X	X			
	QC 112	11/9/2013			1		X	X	X		X			X			
*	QC 113	11/9/2013			1		X	X	X		X			X			*
	Trip Blank	9/9/2013	W	Vial	2			X							X		
	Trip Spike	11/9/2013	S	Vial	1		X	X									13/9/13
	TP2 -1-0	10/9/2013	S	Jar	1	X											Tocfast.
	TP28 -1-0	11/9/13	S	Jar	1	X											660608.
	TP28 -2-0	11/9/13	S	Jar	1		X	X	X	X	X	X	X	X			
				TOTAL	16	3	7	8	6	4	6	4	4	5	1	1	

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

SGS

AUSTRALIA – ENVIRONMENTAL SERVICES SYDNEY – PROFORMA FORM
SAMPLE INFORMATION

Approved: D. Liang

JOB No. SE120709

Sample No.	P 100ml UP	P 250ml UP	P 500ml UP	P 1L UP	G 100 Amber UP	G 200 Amber UP	G 500 Amber UP	G 1L Amber UP	G 40ml vial Up	G 40ml Vial ~~HCl~~ NaSO4	P 100ml HCl	G 40ml Vial H2SO4	P 100ml H2SO4	P 250ml H2SO4	G 500ml Amber H2SO4	G 1L H2SO4	P 100/250ml HN03 Total	P 100ml HN03 Filtered	P 250ml NaOH	P 250ml Zn Acetate	Plastic Bag	G 250ml Soil Jar	100ml metal bottle			Sample Matrix	Lab Bottles Supplied By	Comments
1-34,35,39,42																					4	1				Soil	SGS	Full
35,36,37							1			2													1			Water	SGS	Full
40									2																	"	"	"
41									1																	Soil	SGS	Full
			66 Samples on hold																									

SAMPLE RECEIPT ADVICE

SE120709A

CLIENT DETAILS

Contact	Nathalie O'Toole
Client	SMEC Australia Pty Ltd - ACT
Address	Sun Micro Building Suite 2, Level 1 243 Northbourne Avenue LYNEHAM ACT 2602
Telephone	02 6234 1900
Facsimile	02 6234 1966
Email	Nathalie.O'Toole@smec.com
Project	**3002369 - OCB - Explosives**
Order Number	**0309--0313**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 12/9/2013
Report Due	Mon 23/9/2013
SGS Reference	**SE120709A**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Thursday 12/9/2013. Results are expected to be ready by Monday 23/9/2013. Please quote SGS reference SE120709A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	1 Soil, 1 Water	Type of documentation received	COC
Date documentation received	12/9/13@3:25pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

Explosives subcontracted to Leeder Consulting, 4 - 5, 18 Redland Drive Mitcham VIC, NATA Accreditation Number 14429.

SAMPLE RECEIPT ADVICE

SE120709A

CLIENT DETAILS

Client SMEC Australia Pty Ltd - ACT

Project 3002369 - OCB - Explosives

SUMMARY OF ANALYSIS

No.	Sample ID	Explosives in Soil
019	TP19-0.0	16

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE120709A

CLIENT DETAILS

Client SMEC Australia Pty Ltd - ACT

Project 3002369 - OCB - Explosives

SUMMARY OF ANALYSIS

No.	Sample ID	Explosives in Water
037	QC 109	16

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

A.B.N. 44 000 964 278
3 - 5, 18 Redland Drive
Mitcham, Vic, 3132
Telephone: (03) 9874 1988
Fax: (03) 9874 1933

Chartered Chemists

27-Sep-2013

REPORT NUMBER: M132032

Site/Client Ref: SE120709A

SMEC Canberra

Sun Micro Building
Suite 2, Level 1
243 Northbourne Avenue
Australian Capital Territory 2602
Attention: Nathalie O'Toole

CERTIFICATE OF ANALYSIS

SAMPLES:	Two samples were received for analysis
DATE RECEIVED:	**16-Sep-2013**
DATE COMMENCED:	**16-Sep-2013**
METHODS:	See Attached Results
RESULTS:	Please refer to attached pages for results.

Note: Results are based on samples as received at SGS Leeder Consulting's laboratories

Note: insufficient water sample for duplicate analysis.

REPORTED BY:

Yan Wang
Senior Chemist

NATA Accredited Laboratory Number: 2562

Accredited for compliance
with ISO/IEC 17025.

(I) RESULTS

Report N°: M132032

Matrix: Soil

Method: MA-1129.SL.01 Explosives

Sample units are expressed in mg/kg on a dry weight basis unless otherwise stated

	Leeder ID	2013024356	2013024357	2013024358
	Client ID	SE120709A-19 TP19-0.0	SE120709A-19 TP19-0.0	Method
Analyte Name	PQL		Duplicate	Blank
HMX	0.1	nd	nd	nd
RDX	0.1	nd	nd	nd
1.3.5-TNB	0.1	nd	nd	nd
1.3-DNB	0.1	nd	nd	nd
Tetryl	0.1	nd	nd	nd
NB	0.1	nd	nd	nd
TNT	0.1	nd	nd	nd
4-Amino-2.6-Dinitrotoluene	0.1	nd	nd	nd
2-Amino-4.6-Dinitrotoluene	0.1	nd	nd	nd
DNT	0.1	nd	nd	nd
2-MNT	0.1	nd	nd	nd
3-MNT	0.1	nd	nd	nd
4-MNT	0.1	nd	nd	nd
PETN	0.1	nd	nd	nd
NG	0.1	nd	nd	nd
1.4-DNB	0.1	nd	nd	nd

(I) RESULTS

Report N°: M132032

Matrix: Water

Method: MA-1129.WW.01 Explosives

Sample units are expressed in mg/L

	Leeder ID	2013024359	2013024361
	Client ID	SE120709A-37 QC109	Method
Analyte Name	PQL		Blank
2-Amino-4.6-Dinitrotoluene	0.001	nd	nd
4-Amino-2.6-Dinitrotoluene	0.001	nd	nd
1.3-DNB	0.001	nd	nd
1.4-DNB	0.001	nd	nd
DNT	0.001	nd	nd
HMX	0.001	nd	nd
2-MNT	0.001	nd	nd
3-MNT	0.001	nd	nd
4-MNT	0.001	nd	nd
NB	0.001	nd	nd
NG	0.001	nd	nd
PETN	0.001	nd	nd
RDX	0.001	nd	nd
Tetryl	0.001	nd	nd
1.3.5-TNB	0.001	nd	nd
TNT	0.001	nd	nd

(II) QUALITY CONTROL

Report N°: M132032

Matrix: Soil

Method: MA-1129.SL.01 Explosives

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2013024362	2013024363
	Client ID	SE120709A-19 TP19-0.0	SE120709A-19 TP19-0.0
Analyte Name	**PQL**	Spike	Spike Dup
HMX		101	99
RDX		102	94
1.3.5-TNB		97	97
1.3-DNB		99	97
Tetryl		99	98
NB		97	100
TNT		82	85
4-Amino-2.6-Dinitrotoluene		96	96
2-Amino-4.6-Dinitrotoluene		96	96
DNT		98	98
2-MNT		95	95
3-MNT		95	95
4-MNT		95	93
1.4-DNB		99	97

(II) QUALITY CONTROL

Report N°: M132032

Matrix: Water

Method: MA-1129.WW.01 Explosives

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2013024364	2013024365
	Client ID	SE120709A-37 QC109	SE120709A-37 QC109
Analyte Name	**PQL**	Spike	Spike Dup
2-Amino-4.6-Dinitrotoluene		73	74
4-Amino-2.6-Dinitrotoluene		71	74
1.3-DNB		84	84
1.4-DNB		84	84
DNT		82	86
HMX		107	113
2-MNT		68	65
3-MNT		67	70
4-MNT		68	89
NB		69	86
RDX		93	87
Tetryl		70	69

QUALIFIERS / NOTES FOR REPORTED RESULTS

PQL	Practical Quantitation Limit
is	Insufficient Sample to perform this analysis.
T	Tentative identification based on computer library search of mass spectra.
ND	Not Detected – The analyte was not detected above the reported PQL.
NC	Not calculated, Results below PQL
nr	Not Requested for analysis.
R	Rejected Result – results for this analysis failed QC checks.
SQ	Semi-Quantitative result – quantitation based on a generic response factor for this class of analyte.
IM	Inappropriate method of analysis for this compound
U	Unable to provide Quality Control data – high levels of compounds in sample interfered with analysis of QC results.
UF	Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
L	Analyte detected at a level above the linear response of calibration curve.
E	Estimated result. NATA accreditation does not cover estimated results.
C1	These compounds co-elute.
C2	These compounds co-elute.
CT	Elevated concentration. Results reported from carbon tube analysis
**	Sample shows non-petroleum hydrocarbon profile

APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

CHAIN OF CUSTODY & ANALYSIS REQUEST
(FOR INTERLAB WORK)

Receiving Laboratory: **SGS Leeder**

Initiating Laboratory: SGS Sydney - Alexandria
Initiating Contact: Emily Yin (au.samplereceipt.sydney@sgs.com)
Send Results to:- **AU.Environmental.Sydney@sgs.com**

Final Report Required: **Yes** / No / NATA	Prelim Report Due: 20/9/13 am/pm	Special Prices: Yes / No	
Send To: **Us** / Client	Final Report Due: 20/9/13 am/pm	Quote No:	Client:** SMEC
Address To: Us / **Client*** (Address As Below)	Matrix / Preservation Method / Analysis Required		Remarks

SGS Job No: SE120709A	Client Job No: 3002369 OCB	Water	Soil	Date sampled		Ice	Acid	Other	None	Explosives										Remarks
Sample No.	Sample No.																			Client Contacts for AUENVSE: **INVOICE** = Invoice **SGS_SYD_REPORTS_PM** = REPORTS **SGS_SYD_SRA_PM** = Sample Receipt Advice
SE120709A-19	TP19-0.0		X	11/9						X										
SE120709A-37	QC109	X		11/9						X										

COURIER SERVICE: STARTRACK

CONSIGNMENT No:

Relinquished By: Emily Yin	Date/Time: 13/9/13	Received By: James Phillips	Date/Time 16/9/13 10.00

NOTES:* Client Address: Attention: Nathalie O'Toole
SMEC Canberra
Sun Micro Building
Suite 2, Level 1 243 Northbourne Avenue ACT 2602

*** Special Prices, Quotes, Clients **MUST BE** Referred To.

SLIM CLIENT CODE: SMEC_ACT

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue
Lyneham
ACT 2602

Attention: **Nathalie O'Toole**

Report **392824-S**
Client Reference OCB 3002369
Received Date Sep 13, 2013

Client Sample ID			**QC110**	**QC113**
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**S13-Se10280**	**S13-Se10281**
Date Sampled			**Sep 11, 2013**	**Sep 11, 2013**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	51
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	51
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	111	107
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5

Client Sample ID			QC110	QC113
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			S13-Se10280	S13-Se10281
Date Sampled			Sep 11, 2013	Sep 11, 2013
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Phenanthrene	0.5	mg/kg	< 0.5	0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH	1	mg/kg	< 0.5	0.5
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	102	107
p-Terphenyl-d14 (surr.)	1	%	73	89
Organochlorine Pesticides				
Chlordane	0.1	mg/kg	< 0.1	-
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	-
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	0.2	mg/kg	< 0.2	-
Toxaphene	1	mg/kg	< 1	-
Dibutylchlorendate (surr.)	1	%	101	-
Tetrachloro-m-xylene (surr.)	1	%	87	-
Polychlorinated Biphenyls (PCB)				
Aroclor-1016	0.5	mg/kg	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-
Total PCB	0.5	mg/kg	< 0.5	-
Dibutylchlorendate (surr.)	1	%	101	-
Speciated Phenols				
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-
2.4.5-Trichlorophenol	0.5	mg/kg	< 0.5	-
2.4.6-Trichlorophenol	0.5	mg/kg	< 0.5	-
Phenol	0.5	mg/kg	< 0.5	-
2-Methylphenol (o-Cresol)	0.5	mg/kg	< 0.5	-
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	< 1	-
2-Chlorophenol	0.5	mg/kg	< 0.5	-

Client Sample ID			QC110	QC113
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			S13-Se10280	S13-Se10281
Date Sampled			Sep 11, 2013	Sep 11, 2013
Test/Reference	LOR	Unit		
Speciated Phenols				
2-Nitrophenol	0.5	mg/kg	< 0.5	-
4-Chloro-3-methylphenol	0.5	mg/kg	< 0.5	-
Pentachlorophenol	1	mg/kg	< 1	-
Phenol-d5 (surr.)	1	%	89	-
Organophosphorus Pesticides (OP)				
Chlorpyrifos	0.5	mg/kg	< 0.5	-
Coumaphos	0.5	mg/kg	< 0.5	-
Demeton (total)	1	mg/kg	< 1	-
Diazinon	0.5	mg/kg	< 0.5	-
Dichlorvos	0.5	mg/kg	< 0.5	-
Dimethoate	0.5	mg/kg	< 0.5	-
Disulfoton	0.5	mg/kg	< 0.5	-
Ethoprop	0.5	mg/kg	< 0.5	-
Fenitrothion	0.5	mg/kg	< 0.5	-
Fensulfothion	0.5	mg/kg	< 0.5	-
Fenthion	0.5	mg/kg	< 0.5	-
Methyl azinphos	0.5	mg/kg	< 0.5	-
Malathion	0.5	mg/kg	< 0.5	-
Methyl parathion	0.5	mg/kg	< 0.5	-
Mevinphos	0.5	mg/kg	< 0.5	-
Monocrotophos	10	mg/kg	< 10	-
Parathion	0.5	mg/kg	< 0.5	-
Phorate	0.5	mg/kg	< 0.5	-
Profenofos	0.5	mg/kg	< 0.5	-
Prothiofos	0.5	mg/kg	< 0.5	-
Ronnel	0.5	mg/kg	< 0.5	-
Stirophos	0.5	mg/kg	< 0.5	-
Trichloronate	0.5	mg/kg	< 0.5	-
Triphenylphosphate (surr.)	1	%	91	-
Chromium (hexavalent)	1	mg/kg	< 1	< 1
% Moisture	0.1	%	12	15
Asbestos			see attached	see attached
Heavy Metals				
Arsenic	2	mg/kg	3.2	3.8
Beryllium	2	mg/kg	< 2	< 2
Boron	10	mg/kg	< 10	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Cobalt	5	mg/kg	6.7	9.1
Copper	5	mg/kg	11	16
Lead	5	mg/kg	25	36
Manganese	5	mg/kg	480	470
Mercury	0.05	mg/kg	< 0.05	< 0.05
Nickel	5	mg/kg	9.0	15
Selenium	2	mg/kg	< 2	2.1
Zinc	5	mg/kg	33	120

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 18, 2013	14 Day
- Method: E004 Petroleum Hydrocarbons (TPH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 18, 2013	14 Day
- Method: LM-LTM-ORG2010			
BTEX	Sydney	Sep 17, 2013	14 Day
- Method: E029/E016 BTEX			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 18, 2013	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Organochlorine Pesticides	Sydney	Sep 18, 2013	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Polychlorinated Biphenyls (PCB)	Sydney	Sep 18, 2013	28 Day
- Method: E013 Polychlorinated Biphenyls (PCB)			
Speciated Phenols	Sydney	Sep 18, 2013	14 Day
- Method: E008 Speciated Phenols			
Organophosphorus Pesticides (OP)	Sydney	Sep 18, 2013	14 Day
- Method: E014 Organophosphorus Pesticides (OP)			
% Moisture	Sydney	Sep 17, 2013	28 Day
- Method: E005 Moisture Content			
Chromium (hexavalent)	Sydney	Sep 17, 2013	28 Day
- Method: E043 /E057 Total Speciated Chromium			
Heavy Metals	Sydney	Sep 17, 2013	180 Day
- Method: E022 Acid Extractable metals in Soils			

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NATA # 1261
Site # 1254 & 14271

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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: SMEC Australia Pty Ltd (ACT)
Address: Suite 2, Level 1, 243 Northbourne Avenue
Lyneham
ACT 2602

Client Job No.: OCB 3002369

Order No.:
Report #: 392824
Phone: 02 6234 1800
Fax:

Received: Sep 13, 2013 1:05 PM
Due: Sep 20, 2013
Priority: 5 Day
Contact Name: Nathalie O'Toole

Eurofins | mgt Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	BTEX	Polychlorinated Biphenyls (PCB)	Speciated Phenols	Organophosphorus Pesticides (OP)	Total Recoverable Hydrocarbons	NEPM 2013 Metals : Metals M13
Laboratory where analysis is conducted														
Melbourne Laboratory - NATA Site # 1254 & 14271														
Sydney Laboratory - NATA Site # 18217					X		X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
External Laboratory						X								
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
QC110	Sep 11, 2013		Soil	S13-Se10280	X	X	X	X	X	X	X	X	X	X
QC113	Sep 11, 2013		Soil	S13-Se10281	X	X	X		X				X	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

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
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

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, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene 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. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX E029/E016 BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions LM-LTM-ORG2010							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH C6-C10 less BTEX (F1)	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons E007 Polyaromatic Hydrocarbons (PAH)							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides E013 Organochlorine Pesticides (OC)							
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls (PCB) E013 Polychlorinated Biphenyls (PCB)							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Speciated Phenols E008 Speciated Phenols							
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.6-Trichlorophenol	mg/kg	< 0.5			0.5	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.5			0.5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 1			1	Pass	
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2-Nitrophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 0.5			0.5	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Method Blank							
Organophosphorus Pesticides (OP) E014 Organophosphorus Pesticides (OP)							
Chlorpyrifos	mg/kg	< 0.5			0.5	Pass	
Coumaphos	mg/kg	< 0.5			0.5	Pass	
Demeton (total)	mg/kg	< 1			1	Pass	
Diazinon	mg/kg	< 0.5			0.5	Pass	
Dichlorvos	mg/kg	< 0.5			0.5	Pass	
Dimethoate	mg/kg	< 0.5			0.5	Pass	
Disulfoton	mg/kg	< 0.5			0.5	Pass	
Ethoprop	mg/kg	< 0.5			0.5	Pass	
Fenitrothion	mg/kg	< 0.5			0.5	Pass	
Fensulfothion	mg/kg	< 0.5			0.5	Pass	
Fenthion	mg/kg	< 0.5			0.5	Pass	
Methyl azinphos	mg/kg	< 0.5			0.5	Pass	
Malathion	mg/kg	< 0.5			0.5	Pass	
Methyl parathion	mg/kg	< 0.5			0.5	Pass	
Mevinphos	mg/kg	< 0.5			0.5	Pass	
Monocrotophos	mg/kg	< 10			10	Pass	
Parathion	mg/kg	< 0.5			0.5	Pass	
Phorate	mg/kg	< 0.5			0.5	Pass	
Profenofos	mg/kg	< 0.5			0.5	Pass	
Prothiofos	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ronnel	mg/kg	< 0.5			0.5	Pass	
Stirophos	mg/kg	< 0.5			0.5	Pass	
Trichloronate	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Method Blank							
Heavy Metals E022 Acid Extractable metals in Soils							
Arsenic	mg/kg	< 2			2	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Boron	mg/kg	< 10			10	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
TRH C6-C9	%	87			70-130	Pass	
TRH C10-C14	%	90			70-130	Pass	
LCS - % Recovery							
BTEX E029/E016 BTEX							
Benzene	%	104			70-130	Pass	
Toluene	%	90			70-130	Pass	
Ethylbenzene	%	86			70-130	Pass	
m&p-Xylenes	%	79			70-130	Pass	
o-Xylene	%	87			70-130	Pass	
Xylenes - Total	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions LM-LTM-ORG2010							
Naphthalene	%	92			70-130	Pass	
TRH C6-C10	%	89			70-130	Pass	
TRH >C10-C16	%	96			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons E007 Polyaromatic Hydrocarbons (PAH)							
Acenaphthene	%	94			70-130	Pass	
Acenaphthylene	%	129			70-130	Pass	
Anthracene	%	127			70-130	Pass	
Benz(a)anthracene	%	86			70-130	Pass	
Benzo(a)pyrene	%	109			70-130	Pass	
Benzo(b&j)fluoranthene	%	115			70-130	Pass	
Benzo(g.h.i)perylene	%	128			70-130	Pass	
Benzo(k)fluoranthene	%	103			70-130	Pass	
Chrysene	%	118			70-130	Pass	
Dibenz(a.h)anthracene	%	128			70-130	Pass	
Fluoranthene	%	123			70-130	Pass	
Fluorene	%	118			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	119			70-130	Pass	
Naphthalene	%	110			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenanthrene	%	123			70-130	Pass	
Pyrene	%	123			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides E013 Organochlorine Pesticides (OC)							
4.4'-DDD	%	90			70-130	Pass	
4.4'-DDE	%	95			70-130	Pass	
4.4'-DDT	%	97			70-130	Pass	
a-BHC	%	86			70-130	Pass	
Aldrin	%	95			70-130	Pass	
b-BHC	%	101			70-130	Pass	
d-BHC	%	90			70-130	Pass	
Dieldrin	%	92			70-130	Pass	
Endosulfan I	%	94			70-130	Pass	
Endosulfan II	%	92			70-130	Pass	
Endosulfan sulphate	%	93			70-130	Pass	
Endrin	%	98			70-130	Pass	
Endrin aldehyde	%	79			70-130	Pass	
Endrin ketone	%	89			70-130	Pass	
g-BHC (Lindane)	%	93			70-130	Pass	
Heptachlor	%	94			70-130	Pass	
Heptachlor epoxide	%	94			70-130	Pass	
Hexachlorobenzene	%	92			70-130	Pass	
Methoxychlor	%	90			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls (PCB) E013 Polychlorinated Biphenyls (PCB)							
Aroclor-1260	%	104			70-130	Pass	
LCS - % Recovery							
Speciated Phenols E008 Speciated Phenols							
2.4-Dichlorophenol	%	111			30-130	Pass	
2.4-Dimethylphenol	%	112			30-130	Pass	
2.4.5-Trichlorophenol	%	89			30-130	Pass	
2.4.6-Trichlorophenol	%	85			30-130	Pass	
Phenol	%	111			30-130	Pass	
2-Methylphenol (o-Cresol)	%	107			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	114			30-130	Pass	
2-Chlorophenol	%	107			30-130	Pass	
2-Nitrophenol	%	110			30-130	Pass	
4-Chloro-3-methylphenol	%	93			30-130	Pass	
Pentachlorophenol	%	86			30-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides (OP) E014 Organophosphorus Pesticides (OP)							
Chlorpyrifos	%	98			70-130	Pass	
Coumaphos	%	89			70-130	Pass	
Diazinon	%	88			70-130	Pass	
Dichlorvos	%	104			70-130	Pass	
Dimethoate	%	91			70-130	Pass	
Disulfoton	%	86			70-130	Pass	
Ethoprop	%	90			70-130	Pass	
Fenitrothion	%	87			70-130	Pass	
Fensulfothion	%	72			70-130	Pass	
Fenthion	%	93			70-130	Pass	
Methyl azinphos	%	86			70-130	Pass	
Malathion	%	96			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methyl parathion	%	110			70-130	Pass	
Mevinphos	%	99			70-130	Pass	
Monocrotophos	%	93			70-130	Pass	
Parathion	%	97			70-130	Pass	
Phorate	%	90			70-130	Pass	
Profenofos	%	92			70-130	Pass	
Prothiofos	%	92			70-130	Pass	
Ronnel	%	95			70-130	Pass	
Stirophos	%	87			70-130	Pass	
Trichloronate	%	92			70-130	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	105			70-130	Pass	
LCS - % Recovery							
Heavy Metals E022 Acid Extractable metals in Soils							
Arsenic	%	92			70-130	Pass	
Beryllium	%	94			70-130	Pass	
Boron	%	86			70-130	Pass	
Cadmium	%	94			70-130	Pass	
Cobalt	%	93			70-130	Pass	
Copper	%	79			70-130	Pass	
Lead	%	97			70-130	Pass	
Manganese	%	103			70-130	Pass	
Mercury	%	94			70-130	Pass	
Nickel	%	98			70-130	Pass	
Selenium	%	93			70-130	Pass	
Zinc	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S13-Se10608	NCP	%	83			70-130	Pass	
TRH C10-C14	S13-Se11505	NCP	%	90			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S13-Se10608	NCP	%	103			70-130	Pass	
Toluene	S13-Se10608	NCP	%	87			70-130	Pass	
Ethylbenzene	S13-Se10608	NCP	%	82			70-130	Pass	
m&p-Xylenes	S13-Se10608	NCP	%	76			70-130	Pass	
o-Xylene	S13-Se10608	NCP	%	82			70-130	Pass	
Xylenes - Total	S13-Se10608	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S13-Se10608	NCP	%	83			70-130	Pass	
TRH C6-C10	S13-Se10608	NCP	%	84			70-130	Pass	
TRH >C10-C16	S13-Se11505	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S13-Se10829	NCP	%	91			70-130	Pass	
Acenaphthylene	S13-Se10829	NCP	%	87			70-130	Pass	
Anthracene	S13-Se10829	NCP	%	92			70-130	Pass	
Benz(a)anthracene	S13-Se10829	NCP	%	54			70-130	Fail	Q08
Benzo(a)pyrene	S13-Se10829	NCP	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se10829	NCP	%	81			70-130	Pass	
Benzo(g.h.i)perylene	S13-Se10829	NCP	%	91			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(k)fluoranthene	S13-Se10829	NCP	%	92			70-130	Pass	
Chrysene	S13-Se10829	NCP	%	93			70-130	Pass	
Dibenz(a.h)anthracene	S13-Se10829	NCP	%	81			70-130	Pass	
Fluoranthene	S13-Se10829	NCP	%	74			70-130	Pass	
Fluorene	S13-Se10829	NCP	%	88			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S13-Se10829	NCP	%	85			70-130	Pass	
Naphthalene	S13-Se10829	NCP	%	93			70-130	Pass	
Phenanthrene	S13-Se10829	NCP	%	82			70-130	Pass	
Pyrene	S13-Se10829	NCP	%	75			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls (PCB)				Result 1					
Aroclor-1260	S13-Se09537	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Speciated Phenols				Result 1					
2.4-Dichlorophenol	S13-Se10829	NCP	%	100			30-130	Pass	
2.4-Dimethylphenol	S13-Se10829	NCP	%	109			30-130	Pass	
2.4.5-Trichlorophenol	S13-Se10829	NCP	%	68			30-130	Pass	
2.4.6-Trichlorophenol	S13-Se10829	NCP	%	79			30-130	Pass	
Phenol	S13-Se10829	NCP	%	107			30-130	Pass	
2-Methylphenol (o-Cresol)	S13-Se10829	NCP	%	107			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S13-Se10829	NCP	%	95			30-130	Pass	
2-Chlorophenol	S13-Se10829	NCP	%	101			30-130	Pass	
2-Nitrophenol	S13-Se10829	NCP	%	101			30-130	Pass	
4-Chloro-3-methylphenol	S13-Se10829	NCP	%	82			30-130	Pass	
Pentachlorophenol	S13-Se10829	NCP	%	81			30-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides (OP)				Result 1					
Chlorpyrifos	S13-Se05989	NCP	%	98			70-130	Pass	
Coumaphos	S13-Se05989	NCP	%	93			70-130	Pass	
Diazinon	S13-Se05989	NCP	%	92			70-130	Pass	
Dichlorvos	S13-Se05989	NCP	%	123			70-130	Pass	
Dimethoate	S13-Se05989	NCP	%	101			70-130	Pass	
Disulfoton	S13-Se05989	NCP	%	77			70-130	Pass	
Ethoprop	S13-Se05989	NCP	%	102			70-130	Pass	
Fenitrothion	S13-Se05989	NCP	%	99			70-130	Pass	
Fensulfothion	S13-Se05989	NCP	%	119			70-130	Pass	
Fenthion	S13-Se05989	NCP	%	90			70-130	Pass	
Methyl azinphos	S13-Se05989	NCP	%	76			70-130	Pass	
Malathion	S13-Se05989	NCP	%	97			70-130	Pass	
Methyl parathion	S13-Se05989	NCP	%	121			70-130	Pass	
Mevinphos	S13-Se05989	NCP	%	107			70-130	Pass	
Monocrotophos	S13-Se05989	NCP	%	92			70-130	Pass	
Parathion	S13-Se05989	NCP	%	97			70-130	Pass	
Phorate	S13-Se05989	NCP	%	93			70-130	Pass	
Profenofos	S13-Se05989	NCP	%	115			70-130	Pass	
Prothiofos	S13-Se05989	NCP	%	118			70-130	Pass	
Ronnel	S13-Se05989	NCP	%	93			70-130	Pass	
Stirophos	S13-Se05989	NCP	%	78			70-130	Pass	
Trichloronate	S13-Se05989	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S13-Se10616	NCP	%	77			70-130	Pass	
Cadmium	S13-Se10829	NCP	%	85			70-130	Pass	
Copper	S13-Se10616	NCP	%	86			70-130	Pass	
Lead	S13-Se10829	NCP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury	S13-Se10616	NCP	%	90			70-130	Pass	
Nickel	S13-Se10829	NCP	%	100			70-130	Pass	
Selenium	S13-Se10616	NCP	%	86			70-130	Pass	
Zinc	S13-Se10829	NCP	%	94			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Beryllium	S13-Se11442	NCP	%	92			70-130	Pass	
Boron	S13-Se11442	NCP	%	96			70-130	Pass	
Cobalt	S13-Se11442	NCP	%	76			70-130	Pass	
Manganese	S13-Se10843	NCP	%	100			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S13-Se10608	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S13-Se11505	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S13-Se11505	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S13-Se11505	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S13-Se10608	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S13-Se10608	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S13-Se10608	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S13-Se10608	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S13-Se10608	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S13-Se10608	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S13-Se10608	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S13-Se10608	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S13-Se10608	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S13-Se11505	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S13-Se11505	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S13-Se11505	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
4.4'-DDD	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
4.4'-DDE	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S13-Se09537	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S13-Se09537	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S13-Se09537	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S13-Se09537	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S13-Se09537	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S13-Se09537	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S13-Se09537	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S13-Se09537	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Speciated Phenols				Result 1	Result 2	RPD			
2.4-Dichlorophenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dimethylphenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.6-Trichlorophenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S13-Se10829	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2-Chlorophenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Nitrophenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S13-Se10829	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S13-Se10829	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides (OP)				Result 1	Result 2	RPD			
Chlorpyrifos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Coumaphos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diazinon	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorvos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethoate	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Disulfoton	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethoprop	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenitrothion	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fensulfothion	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenthion	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl azinphos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Malathion	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl parathion	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Organophosphorus Pesticides (OP)				Result 1	Result 2	RPD			
Mevinphos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Monocrotophos	S13-Se05989	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Parathion	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phorate	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Profenofos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Prothiofos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ronnel	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Stirophos	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloronate	S13-Se05989	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S13-Se10829	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S13-Se10829	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Copper	S13-Se10829	NCP	mg/kg	42	54	25	30%	Pass	
Lead	S13-Se10829	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S13-Se10616	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S13-Se10829	NCP	mg/kg	6.4	8.5	29	30%	Pass	
Selenium	S13-Se10829	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Zinc	S13-Se10829	NCP	mg/kg	8.4	11	26	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Beryllium	S13-Se11442	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron	S13-Se11442	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Cobalt	S13-Se11442	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Manganese	S13-Se11442	NCP	mg/kg	180	220	18	30%	Pass	

Comments

Asbestos was analysed by ASET. NATA accreditation number 14484. Report reference ASET35208/38388/1-2.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	Yes

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Jean Heng	Client Services
Bob Symons	Senior Analyst-Inorganic (NSW)
James Norford	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

Dr. Bob Symons

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request