Soils and Groundwater Impact Assessment

Proposed Port Kembla Bulk Liquids Terminal

TQ Reference: PJ-PK-0001-REPT-019

8201510303/Report 002 Ver 3

Prepared for
TQ Holdings Australia Pty Ltd

12 November 2015

Cardno
Shaping the Future

Contact Information

Cardno South Coast
Trading as Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

Level 1, 47 Burelli Street
PO Box 1285
Wollongong NSW 2500

Telephone: 02 4228 4133
Facsimile: 02 4228 6811

southcoast@cardno.com.au
www.cardno.com.au

Author(s):

Cassy Baxter
Environmental Scientist

Approved By:

Hugh Selby
Senior Scientist

Alex Larance
Senior Environmental Engineer

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1	24/07/2015	Draft for client review	HS	AJL
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3	12/11/2015	Updates based on NSW Ports and client comments	CNB	AJL

Executive Summary

TQ Holdings Australia Pty Ltd (TQ) commissioned Cardno (NSW/ACT) Pty Ltd to assess potential soil and groundwater impacts associated with the proposed development of a Bulk Liquids Terminal (the ‘’Proposal) in Port Kembla, NSW. The Proposal is to be located at Lot 2 DP1125445, Lot 301 DP1148391 and Lot 11 DP1182111 in Port Kembla (the ‘Site’).

The scope of this assessment was to review existing information relating to soils, contamination and groundwater for the Site, summarise the existing site conditions with respect to soils, contamination and groundwater, and identify potential soils, contamination and groundwater impacts specific to the Proposal.

A range of previous soil and groundwater investigations have been undertaken at the Site. These investigations included sampling of soils and groundwater across and surrounding the Site. In general these investigations found that the site was underlain by fill comprised of slag and possibly dredge spoil to a depth of approximately 2 to 3 metres below ground surface (mbgs). Groundwater was encountered at approximately 4mbgs at the Site; however groundwater levels surrounding the Site ranged from 0.5 metres Australian Height Datum (AHD) to 8.7m AHD. In general concentrations of potential contaminants of concern in a limited number of soil and groundwater samples analysed, were below the adopted assessment criteria for a commercial / industrial land use setting. Some elevated concentrations of metals (copper and zinc) were reported in groundwater collected from groundwater monitoring bores at and surrounding the site.

Review of Acid Sulfate Soil risk mapping on the Australian Soil Resource Information System (ASRIS) on 2nd July 2015 indicated that the probability of acid sulfate soil (ASS) occurrence on the Site was low. However sampling of natural sands underlying the fill material, indicate that Potential Acid Sulfate Soils (PASS) are present at approximately 5mbgs.

As the Proposal generally involves the construction of above ground facilities and based on the available data, concentrations of potential contaminants of concern in soils and groundwater and PASS are unlikely to impact on the Proposal. However the Proposal has the potential for the following impacts on soils, contamination and groundwater during the construction and operation of the facility:

- Soils
    - Increased risk of soil/surface fill erosion during construction earthworks.
    - Increased risk of sedimentation of surrounding waterbodies during construction due to sediment laden water from exposed soils leaving the Site.
    - Minor disturbance of PASS during piling and excavation works.
- Contamination
    - Increased risk of disturbance of existing slag fill material which may contain potential contaminants of concern. This may result in the mobilisation of surface and subsurface contaminants, potentially resulting in the release of contaminants to soil, groundwater, surface water, sediments and air.
    - Mobilised contaminants may migrate offsite into the surrounding environment via leaching, overland flow and/or subsurface flows.
    - Potential spills and leakages from the bulk fuel storage and refueling facilities.
- Groundwater
    - As groundwater is relatively shallow, construction and operation activities should be managed to prevent contamination of groundwater occuring through fuel spills and leakages migrating vertically down into groundwater due to unsealed pavements. Given the proposed bulk storage of liquid fuels, monitoring groundwater conditions pre-construction and during operation will be undertaken.

Through the implementation if the following mitigation measures project risks identified the above can be managed to ensure a low likelihood of occurence:

- Development of a Construction Environmental Management Plan (CEMP) including a Soil and Water Management Sub-plan to manage potential erosion, sedimentation and ASS impacts during construction. Sediment and erosion control devices should be installed to minimise transport of sediment in accordance with *Managing Urban Stormwater, Soils & Construction, Volume 1* (Landcom, 2004). These devices should be inspected regularly and immediately after rainfall to ensure effectiveness over the duration of works. Any damage to erosion and sediment controls should be rectified immediately. Risks associated with the disturbance of any ASS encountered during construction would be managed through and ASS management sub-plan and an unexpected finds protocol. Should Acid Sulfate Soils be encountered, clause 7.5 of Wollongong Local Environment Plan (WLEP) 2009 provides a framework for requirements relating to acid sulfate soil management;
- Excavated material to be classified in accordance with NSW EPA Guidelines;
- Development of an Operational Environmental Management Plan (OEMP) to manage potential operational phase soil and groundwater impacts, such as spills and leakages.
- Construction of hardstand areas with appropriately sized bunding around fuel storage and refuelling areas.
- Construction of appropriate enclosed and separated clean and oily water drainage systems which shall include the installation and operation of oil/water separators;
- Implementation of regular maintenance inspections/audits during operation; and
- A groundwater monitoring program will be undertaken across the site prior to and during both construction and operational phases to ensure the ongoing assessment and review of groundwater quality onsite. The results of the monitoring will form part of regular Environmental Condition Reports to NSW Ports and will ensure that any groundwater contamination can be identified and managed appropriately.

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1 Introduction

1.1 Purpose of Report and Legislative Context

Cardno (NSW/ACT) Pty Ltd (Cardno) was engaged by TQ Holdings Australia Pty Ltd (TQ) to assess potential soil and groundwater impacts associated with the proposed development of a Bulk Liquids Terminal (the "Proposal") in Port Kembla. The proposed Bulk Liquids Terminal is to be located at Lot 2 DP1125445, Lot 301 DP1148391 and Lot 11 DP1182111 in Port Kembla (the 'Site'). This assessment has been developed in accordance with the Draft Secretary's Environmental Assessment Requirements (SEARs) as detailed in **Table 1-1**.

Table 1-1 Secretary's Environmental Assessment Requirements (SEARs)

Secretary's Environmental Assessment Requirement
Soil and Water – including:
▪ an assessment of the potential soil, groundwater and surface water impacts and the measures proposed to mitigate these impacts. ▪ an assessment of pollutant loads and concentrations, contaminated groundwater and soils, acid sulfate soils and proposed mitigation and management measures, particularly in the event of a product spill.

This report also reviews and considers the adequacy of a series of existing contamination assessments in the legislative context provided in **Table 1-2**.

Table 1-2 Legislative Framework Reviewed in this Report

Instrument	Context
Commonwealth	
National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended 2013	The purpose of the Measure is to establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, land owners, developers and industry.
New South Wales	
State Environmental Planning Policy (Three Ports) 2013	Guides the preservation to the amenity of the area, including biodiversity values, through the preservation of trees and other vegetation and ensures that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes.
Protection of the Environment Operations Act 1997	Protect, restore and enhance the quality of the environment by reducing risk to human health and prevent degradation of the environment.
Contaminated Land Management Act 1997	The general objective of the CLM Act is to establish a process for investigating and (where appropriate) remediating land that the EPA considers to be contaminated significantly enough to require regulation.

1.1.2 Scope of Review

The scope of this review was to:

- Review available background documentation relating to soils, groundwater and contamination
- Identify potential impacts to soil, groundwater and contamination associated with the proposed development.

1.2 Site Description

1.2.1 Subject Site and Study Area

The subject site consists of three parcels of land and a berth as identified in **Figure 1-1** and detailed in Table 1-3 below.

Table 1-3 Land Parcel Descriptions

Parcel	Current Land Use	Proposed Land Use
Site 1	Vacant graded gravel surface	Combustible and flammable bulk liquids storage and pump bay.
Site 2	Graded gravel surface currently used for laydown and storage area by NSW Ports and Kerman's for the construction of the neighboring grain storage facility and berth 103 extension	Combustible and flammable bulk liquids and truck loading facilities.
Site 3	Grassed unused area with evidence of vehicle movement	Site control room & office block, maintenance work shop and utilities.
Berth 104	Solid concrete common user working berth utilised for loading and unloading bulk goods.	Bulk liquids unloading (and potential loading) facilities.

The Site is currently used for commercial / industrial purposes and has been highly modified to achieve a flat working surface. Due to the nature of the port these areas are likely to have had a variety of land uses since the development of the port infrastructure.

1.2.2 Locality

The TQ site is located within the Port Kembla Port precinct approximately 70 km south Sydney and 3 km south of the Wollongong City Centre in the Wollongong Local Government Area (LGA) (**Figure 1-2**). The port of Port Kembla is connected to Wollongong via the arterial road Spring Hill Road and to Sydney via the Princes Motorway. The Port is located on a trained and highly modified estuary at the mouth of Allans Creek and Gurungaty Waterway with the Tasman Sea to the east. Port Kembla consists of a number of industrial land uses with various berths for the loading and unloading of cargo ships.

1.3 Proposed Development

TQ is proposing to construct and operate a Bulk Liquids Terminal with capacity of up to 288 ML of storage for combustible and flammable liquids on land situated between existing Graincorp and Port Kembla Coal Terminal operations in the Inner Harbour area of Port Kembla. The proposed development will occur on land zoned SP1 – Special Activities under State Environmental Planning Policy (Three Ports) 2013.

1.3.1 Civil Works

The proposed works will require re-profiling of the project areas to meet design levels and drainage gradients. A bulk earthworks strategy has been developed for the project identifying that the proposed development will require the importation of 4,355m^3 of clean fill. Fill imported to the site will be of a suitable nature and will be provided with certification of the quality of the fill in accordance with the *Protection of Environment Operations Act 1997.*

1.3.2 Spill Containment Design

The final surfaces of the site will be sealed with the installation of bunds designed in accordance with relevant Australian Standards to control potential spills. The following devises have been designed for inclusion within the site to ensure any spills as part of the operation are contained for appropriate management:

- Vapour Recovery Unit Sump – This sump will have a capacity of approximately 1m^3 to collect any leakage or spillage from the Vapour Recovery Unit. The area will be roofed to minimise the collection of rainwater.
- Marine Loading Arm Controls – At this location containment and capture of hydrocarbon spills will be provided by a sealed dished area around the loading platform. This dished are will drain via a flame trap under gravity to a storage/separator onshore.
- Tank Bunds – All tanks are contained within tank bunds to contain product spillage. Any accumulated liquid can then be drained via a common secondary bund which can be controlled to ensure bund sumps can be drained individually. Waste water can then be directed into secondary storage or an oily water separator for further processing.
- Product Pump Area – These areas on Site 1 and 2 are equipped with a curbed concrete containment area with a blind sump and pump out arrangements as above.
- Loading Bays – Each individual loading bay is bunded with a grated drain pit at the edge of the bay. Flow from the grate is directed via an interceptor pit to the 50m^3 underground slop tanks.
- Pig Launching and Receiving Areas – Pig stations on Site 1 and 2 are equipped with a curbed concrete containment area with a blind sump and pump out arrangements.

Treatment of waste water from these containment facilities has been detailed in the project Surface Water Assessment (Cardno, 2015) (TQ Doc: PJ-PK=0001-REPT-016).

105 / 1141089
106 / 1141089
103 / 1141089
21 / 1046295
20 / 1046295
Site 3
1 / 1125445
10 / 1182111
TOM THUMB ROAD
12 / 1182111
Site 1
2 / 1125445
302 / 1148391
3 / 1125445
MORTON WAY
Site 2
301 / 1148391
303 / 1148391
22 / 1128396
2001 / 1030233
122 / 1128397
FARRER ROAD
70 / 1182824
Berth 104
2003 / 1030233

Legend

- Project Site (7.22 ha)
- Cadastre (LPI, 2015)

Site #	Lot / DP	Area (ha)
Site 1	2 / 1125445	1.80
Site 2	301 / 1148391	4.14
Site 3	11 / 1182111	0.37
Berth 104	70 / 1182824	0.91
		7.22

FIGURE 1-1
1:2,500 Scale at A3

Metres
0 25 50 75 100

Site Plan

PORT KEMBLA

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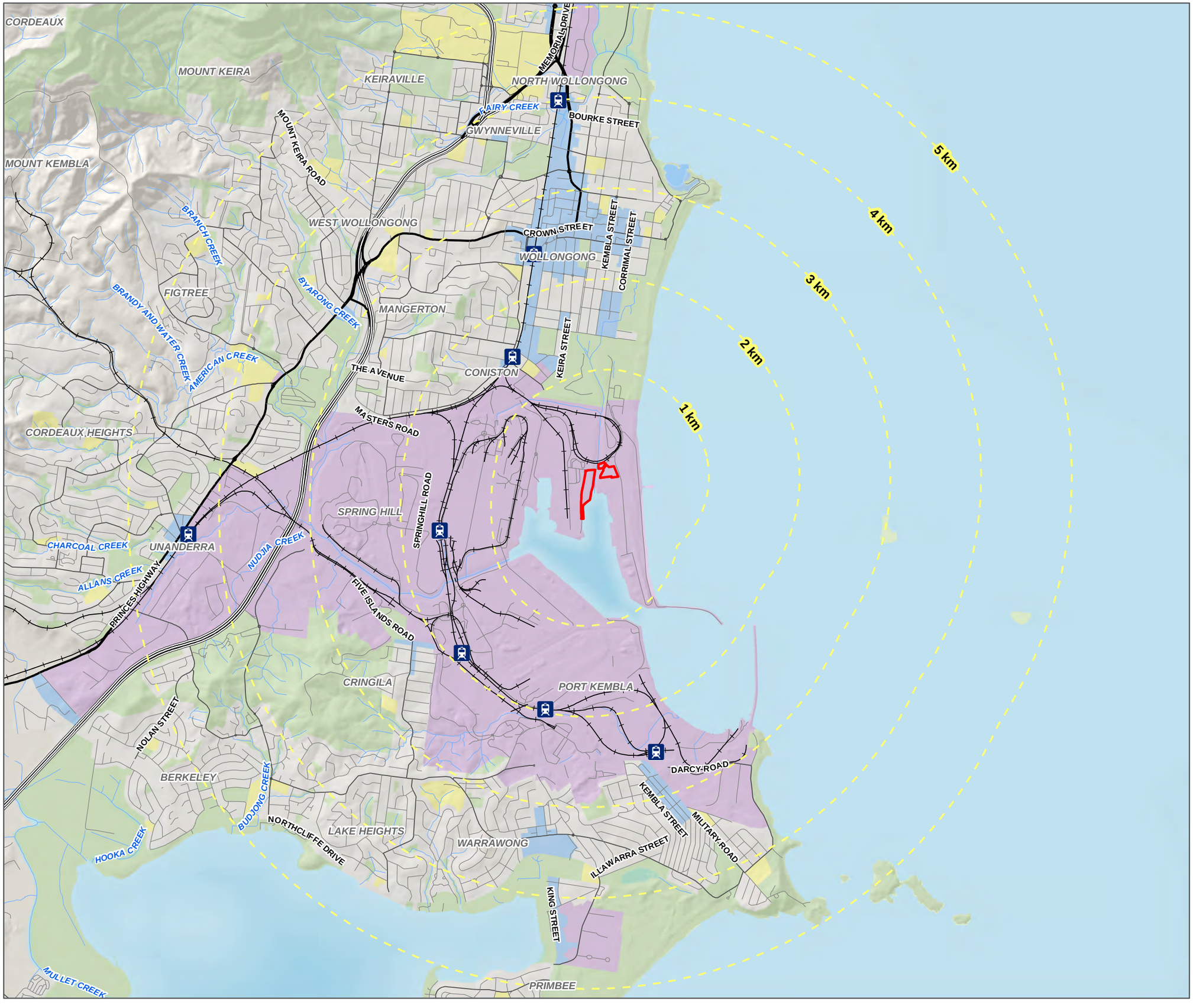
Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2015-10-26
Coordinate System: GDA 1994 MGA Zone 56
Project: 82015103-03
Map: 8201510303-GS-001-SitePlan.mxd 05
Aerial imagery supplied by nearmap (January, 2015)



Location Plan

PORT KEMBLA

Legend

- Project Site
- Railway Stations
- Railway
- Motorway
- Primary Road
- Distributor Road
- Local Road
- Watercourses

Land Use (ABS, 2011)

- Commercial
- Education
- Industrial
- Parkland
- Residential
- Water

FIGURE 1-2

1:40,000 Scale at A3

Kilometres

0 0.5 1 1.5 2

N

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2015-10-26
Coordinate System: GDA 1994 MGA Zone 56
Project: 82015103-03
Map: 8201510303-GS-002-LocationPlan.mxd 03

2 Literature Review

2.1 Regional Geology and Hydrogeology

2.1.1 Soils

The Wollongong-Port Hacking 1:100,000 Soil Landscape Sheet (Soil Conservation Service, 1990) indicates that the Site is underlain by the "Disturbed Terrain" soil landscape grouping. Soil investigations undertaken at the Site, as summarised in Section 2.2 support this, as evidence of fill (comprised of slag, gravel, concrete and sand), clay, silty clay and sand have been logged in boreholes and test pits at the Site. The following provides an overview of the geological profile as summarised by URS (2005):

Table 2-1 Geological (Soil) Profile (URS, 2005)

Depth (mBGL)	Current Land Use
0.0-2.0	FILL: Slag, gravel, sand, rock fragments, mostly dry.
0.5 – 2.0	SILTY CLAY: Soft, moist, dark brown; some sand, medium plasticity.
2.0 -5.5	SAND: Moist, medium-grained, some shells, some clay.
3.4 – 4.4	GRAVEL: Black, some clay, wet.
4.5 – 6.0	SANDY CLAY: black, moist, soft, plastic, some gravel.

The Wollongong 1:50,000 Geological Sheet 9029-11 indicates that the site is underlain by Quaternary alluvium including estuarine muds, silt, gravel, beach and dune sand.

2.1.2 Groundwater

A search of the NSW Groundwater Database on 02 July 2015 identified the following four groundwater bores within a 500m radius of the Site:

- GW112707
- GW112708
- GW112709
- GW112710

These bores appear to be located to the east of the subject Site, however no data was available on the bores or there intended uses. It is noted that URS (2005) reported total dissolved solids (TDS) concentrations in the groundwater at the Site ranging from 273 mg/L to 12,439 mg/L. These concentrations would make the groundwater unsuitable for drinking water.

Previous groundwater investigations at and surrounding the Site encountered groundwater at approximately 4mbgs onsite, with depths to groundwater surrounding the Site ranging from 0.5m AHD to 8.7m Australian Height Datum (AHD). Groundwater was generally encountered in the higher porosity sands, however groundwater depth and flow is likely to be a function of the varying nature of fill across the Site and surrounding areas.

Groundwater was generally considered to flow towards the east.

2.1.3 Acid Sulfate Soils

Review of Acid Sulfate Soil risk mapping on the Australian Soil Resource Information System (ASRIS) on 02 July 2015 indicated that the probability of acid sulfate soil occurrence on the Site was low. However areas of high probability of acid sulfate soil occurrence were located to the west of the Site.

The Acid Sulfate Soil Risk Map, Wollongong (9029S2, Department of Land and Water Conservation, Edition 2) notes the Site lies within disturbed terrain, which includes areas filled as the result of previous reclamation.

Sampling of natural sands underlying the fill material, indicated that Potential Acid Sulfate Soils (PASS) are present at approximately 5mbgs (Douglas Partners, 2012).

2.2 Previous contaminated land assessments

The following contamination assessments have been undertaken at the Site (refer to Appendix A):

- URS (2005) National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW
- URS (2008) National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW
- URS (2012) National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW
- Coffey (2012) Preliminary Baseline Contamination Assessment – Proposed Biodiesel Facility Inner Harbour, Port Kembla.

A summary of the reports is provided below:

- URS 2005

The URS 2005 report included a review of the site history. This review identified that the Site was originally part of the Tom Thumb Lagoon, with the Inner Harbour backfilled with blast furnace slag and a casting basin used in the construction of the Sydney Harbour Tunnel. Approximately 2 million tonnes of blast furnace slag were reported to have been used to reclaim the land and level the area. The Graincorp facility was constructed to the west of the Site.

URS also undertook soil and groundwater sampling across a broader area than the Site, with the following locations considered to be within the Site:

  - Site 2 – IHMW10

No soil or groundwater sampling locations were considered to fall within Site 2 and 3. Concentrations of potential contaminants of concern in soils sampled from boreholes SB13 and SB14 nearby were less than the adopted assessment criteria. Elevated concentrations of copper and zinc were detected in monitoring well IHMW10, while elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) were detected in MW22 to the south of Site 1.

- URS (2008)

This report is generally an update of the URS report from 2005 and involved a site inspection and review of the previous contamination assessments.

- URS (2012)

The URS 2012 report involved a site inspection and review of the previous contamination assessments. The site inspection by URS indicated that the Site had been regraded, with fill placed over the underlying geology to cap it. The report indicated that material (reportedly excavated dredge spoil) had been periodically stockpiled on the site.

- Coffey (2012)

Coffey undertook a site walkover which indicated that Site 1 was unoccupied, while Site 2 had been used for the storage of new vehicles. Coffey then excavated the following fourteen test pits up to approximately three metres below ground surface level across the three areas:

  - Site 1 – CTP07 to CTP13.
  - Site 2 - CTP01 to CTP06.
  - Site 3 – CTP14.

The Coffey investigation found that the Site was covered with a cemented slag pavement, overlying fill material of varying composition. Although not all the Coffey test pits extended through the fill material, where they did, reworked sands were generally encountered underneath the fill. The concentrations of potential contaminants of concern in soils analysed by Coffey were less than the adopted assessment criteria for a commercial / industrial land use.

Cardno notes that the sampling densities from the various contamination investigations are less than the minimum sampling densities for hotspot in accordance with the NSW EPA (1995) *Sampling Design Guidelines.* The locations of previous soil and groundwater monitoring well locations are shown on Figure 3.1.

2.3 EPA record searches

2.3.1 Contaminated Land Record of Notices

The Contaminated Land Record of Notices is maintained by the Environment Protection Authority (EPA) in accordance with Part 5 of the *Contaminated Land Management* (CLM) *Act 1997* and contains regulatory notices issued by the EPA in relation to contaminated sites.

The Record of Notices was searched on the 01 July 2015. Eight notices relating to three sites were reported for the suburb of Port Kembla, however these sites are located to the south of the Site.

2.3.2 PoEO Public Register

The Protection of the Environment Operations (PoEO) Public Register under Section 308 of the *Protection of the Environment Operations* (PoEO) *Act 1997* contains Environment Protection Licences (EPLs), applications and notices issued by the EPA. The Public Register was searched on 01 July 2015 within the suburb of Port Kembla to identify any issues of relevance to the Site.

Eighteen active and two former licences were identified and an active EPL was noted for the adjoining operations of GrainCorp, Port Kembla Coal Terminal, AAT and Quattro grain terminal.

2.3.3 List of NSW Contaminated Sites Notified to the EPA

A search of the List of NSW Contaminated Sites Notified to the EPA on the 01 July 2015 identified fourteen sites reported to the EPA within the suburb of Port Kembla. As the listed sites are in the vicinity of the Site, the actual risk of off-site contamination arising from these sources would be dependent upon the extent and nature of off-site contamination (if any) and hydrogeological conditions, including confirmation of the local groundwater flow direction.

3 Assessment of Existing Information

3.1 Existing Contamination Information

3.1.1 Soils

As the Site has been and is proposed to be used for commercial / industrial purposes, concentrations of potential contaminants of concern have been compared against National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 criteria for commercial / industrial premises. It is noted that as the previous reports were written prior to the NEPM amendment came into effect in 2013, Cardno has reviewed the available laboratory data against the updated criteria, as summarised below.

Cardno notes that the sampling density is less than the minimum sampling density for hotspot detection as listed in Table 1A of the *NSW EPA Sampling Design Guidelines*.

- *Total Recoverable Hydrocarbons (TRH) and Benzene, Toluene, Ethyl-benzene, Xylenes and Naphthalene (BTEXN)*

Concentrations of TRH and BTEXN in the soils sampled were generally below the laboratory detection limits. Where TRH was detected it was below the adopted Health Screening Level for a commercial / industrial land use setting.

- *Volatile Organic Compounds (VOCs), phthalate esters, Organochlorine and Organophosphate pesticides (OCPs and OPPs) and polychlorinated biphenyls (PCBs)*

Concentrations of Volatile Organic Compounds (VOCs), phthalate esters, pesticides and polychlorinated biphenyls in the limited number of soils sampled were less than the laboratory detection limits and the adopted assessment criteria.

- *PAHs and Phenols*

Concentrations of PAHs and Phenols were generally below the laboratory detection limits. Where PAHs were detected they were at concentrations below the adopted Health Screening Level for a commercial / industrial land use setting.

- *Metals*

Laboratory analysis of a limited number of soils for metals (arsenic, cadmium, chromium, copper, lead, mercury and zinc) indicates that concentrations of metals in soils sampled were less than the adopted assessment criteria for a commercial / industrial land use setting.

3.1.2 Groundwater

Previous groundwater sampling at the Site found:

- Physical Parameters ranged between
    - Electrical conductivity – 390uS/cm (MW22) to 17,770uS/cm (MW11). This range is indicative of fresh to saline water.
    - pH – 7.13 (MW21) to 12.46 (MW12). This range is indicative of neutral to alkaline water.
    - Redox potential - ranged from -2mV (MW11) to 318 mV (MW12). This is indicative of oxidising conditions.
    - Dissolved Oxygen ranged between 2.62mg/L (MW20) to 10.65mg/L (MW13).

The physical parameters listed above show groundwater conditions vary across the Site. The following provides a summary of the limited groundwater analytical data available for the Site.

- *Total Recoverable Hydrocarbons (TRH) and Benzene, Toluene, Ethyl-benzene, Xylenes and Naphthalene (BTEXN)*

Concentrations of TRH and BTEXN in the groundwater sampled were generally below the laboratory detection limits. Where TRH was detected it was below the adopted Health Screening Level for a commercial / industrial land use setting.

- *Volatile Organic Compounds (VOCs), phthalate esters, Organochlorine and Organophosphate pesticides (OCPs and OPPs) and polychlorinated biphenyls (PCBs)*

Concentrations of Volatile Organic Compounds (VOCs), phthalate esters, pesticides and polychlorinated biphenyls in the limited number of groundwater wells sampled were less than the laboratory detection limits and the adopted assessment criteria.

- *PAHs and Phenols*

Concentrations of Phenols were generally below the laboratory detection limits. Concentrations of PAHs in the groundwater sampled were below the adopted Health Screening Level for a commercial / industrial land use setting.

- *Metals*

Laboratory analysis of a limited number of groundwater samples for metals (arsenic, cadmium, chromium, copper, lead, mercury and zinc) indicates that concentrations of metals in groundwater sampled were less than the adopted assessment criteria, however some elevated concentrations of copper and zinc were detected.

FIGURE 3-1

1:3,000 Scale at A3

Metres

0 25 50 75 100

Soil and Groundwater Monitoring Locations

PORT KEMBLA

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2015-10-26
Coordinate System: GDA 1994 MGA Zone 56
Project: 82015103-03
Map: 8201510303-GS-003-MonitoringLocations.mxd 04
Aerial imagery supplied by nearmap (January, 2015)

3.2 Potential Impacts

3.2.1 Soils and Geology

Soil Erosion

During construction there would be an increased risk of soil erosion from areas of exposed soil and stockpiles, primarily in areas of earthworks. Excavation, transportation of soils (and fill), the construction of subgrade, embankments, culverts, temporary stockpiling of material are activities that would result in the exposure of surface soils and subsoils. These activities increase the risk of erosion and subsequent transportation of soils and sediments by water runoff and wind to nearby waterways including Port Kembla. Sedimentation within these aquatic environments has the potential to disrupt ecosystem function through the smothering of benthic habitats and the increase of suspended material within the water column influencing light availability. Increased sediment loads can also introduce sediment bound nutrients, trace metals and other toxicants that can influence water and sediment quality.

The potential for soil erosion and subsequent impacts on water quality would vary within the Proposal footprint and is dependent on the following factors:

- Slope gradients
- The nature and scale of the earthworks
- The type of soils and their erosion potential
- The proportion of exposed areas relative to the catchment size.

In general as shallow soils have been logged as being slag, they are unlikely to be highly erodible.

Reuse and Disposal of Soils

The Proposal would involve some earthworks in order to meet the required grades and drainage requirements. Subject to the quality, quantity and timing of spoil being generated, spoil would be reused onsite where possible or classified and disposed of off-site to an appropriately licenced facility. Excavated material shall be classified in accordance with NSW EPA Guidelines prior to disposal.

Waste materials such as ASS, asphalt, excavated soils, rock, piling cuttings or other previously unidentified contaminated material, have the potential to result in the migration of contaminants and pollution of soils and water if they are not identified, or when improperly reused or disposed. If uncovered they would be disposed of at a suitably licenced facility.

3.2.2 Acid Sulfate Soils

There is a potential for ASS to occur in the project area, with borehole logs indicating that fill material overlies natural sands across the majority of the Site. Limited ASS testing undertaken as part of the Douglas Partners (2012) geotechnical assessment, identifying that Potential Acid Sulfate Soils were present in natural sands at approximately 5mbgs, hence there is a possibility that construction activities could disturb ASS. The construction activities with the greatest risk of disturbing ASS are excavation works and piling.

Sulfide minerals within ASS are generally stable under reducing conditions however; on exposure to the atmosphere the acidity produced from sulfide oxidation can impact water quality and corrode concrete and steel structures. In addition to the acidification of both ground and surface waters, a reduction in water quality may result from low dissolved oxygen levels, high concentrations of aluminium and iron, and the release of other metals.

The risks associated with the disturbance of ASS can be adequately managed and mitigated through the implementation of the management measures documented in the Acid Sulfate Soil Manual (Stone et al., 1998) and the Acid Sulfate Soil Assessment Guidelines (Ahern et al., 1998). Risks associated with the disturbance of any ASS during construction would be managed through an expected finds protocol, which should be included in the CEMP. Clause 7.5 of Wollongong Local Environment Plan (WLEP) 2009 provides a framework for requirements relating to acid sulfate soil management.

3.2.3 Contaminated Land

Although contaminated soils and groundwater have not been identified in the study area, there is a risk that during construction activities (primarily excavation and earthworks) contaminated soils and groundwater may be exposed.

The highest risk of encountering contaminated soils and/or groundwater is during earthworks is during the excavation of slag. Disturbance of contaminated material could have the following impacts:

- Increased risk of disturbance of slag material which may contain potential contaminants of concern. This may result in the mobilisation of surface and subsurface contaminants, resulting in the release of contaminants to soil, groundwater, surface water, sediments and air.
- Mobilised contaminants may migrate offsite into the surrounding environment via leaching, overland flow and/or subsurface flows.

The risks associated with the disturbance of contamination are expected to be low and can be managed through the implementation of the CEMP and an unexpected finds protocol.

During construction there is a risk of contamination through:

- Potential spills and leakages from the construction equipment.
- Introduction of uncontrolled fill material.

These risks will be mitigated adequate spill control measures in the CEMP as well measures to control the importation of fill.

During the operational phase of the project there is the risk of spills and leakages from the bulk fuel storage and refuelling facilities. To mitigate these risks the following, as described further in **Section 1.3.2**, would be undertaken:

- Construction of hardstand areas with appropriately sized bunding around fuel storage and refuelling areas.
- Construction of appropriate enclosed and separated drainage systems, oil/water separators.
- Implementation of maintenance inspections/audits during operation.

3.2.4 Groundwater

Potential impacts to groundwater are unlikely given that the bulk of the works are above ground. However, as groundwater is relatively shallow, if construction and operation activities are poorly managed, contamination of groundwater could occur through fuel spills and leakages migrating vertically down into groundwater due to unsealed pavements. Given the bulk storage of fuels, consideration should be given to monitoring groundwater conditions pre-construction and during operation.

If groundwater is encountered during construction and requires dewatering, an assessment of the dewatering volumes and groundwater quality should be undertaken to inform licensing and groundwater management options.

A groundwater monitoring program will be undertaken across the site prior and through both construction and operational phases to ensure the ongoing assessment and review of groundwater quality onsite. The results of the monitoring will form part of regular Environmental Condition Reports to NSW Ports and will ensure that any groundwater contamination can be identified and managed appropriately.

4 Conclusion & Recommendations

4.1 Conclusions

TQ Holdings Australia Pty Ltd (TQ) commissioned Cardno (NSW/ACT) Pty Ltd to assess potential soil and groundwater impacts associated with the proposed development of a Bulk Liquids Terminal (the ''Proposal) in Port Kembla (the 'Site').

As part of this assessment, Cardno has undertaken a review of previous contamination assessments prepared for the Site. These investigations identified a history of land reclamation resulting in the presence of fill across the Site. Limited soil and groundwater sampling across the Site did not detect concentrations of potential contaminants of concern in excess of the adopted screening criteria for a commercial / industrial land use. Cardno notes that the sampling densities are less than the minimum sampling densities for hotspot in accordance with the NSW EPA (1995) *Sampling Design Guidelines*.

Potential impacts to soil, groundwater and contamination from the Proposal are expected to be minimal, however include:

Construction

- Increased risk of soil/surface fill erosion during construction earthworks.
- Increased risk of sedimentation of surrounding waterbodies during construction due to sediment laden water from exposed soils leaving the Site. This may include the mobilisation of contaminants potentially within slag into surface water and groundwater bodies.
- Minor disturbance of Potential Acid Sulfate Soils (PASS) during piling and excavation works.

Operation

- If operational activities are poorly managed, contamination of groundwater could occur through fuel spills and leakages migrating vertically down into groundwater due to unsealed pavements.

4.2 Recommendations

The following actions are recommended:

- Development of a Construction Environmental Management Plan (CEMP) including a Soil and Water Management Sub-plan to manage potential erosion, sedimentation and acid sulfate soil impacts during construction. Sediment and erosion control devices should be installed to minimise transport of sediment in accordance with Managing Urban Stormwater, Soils & Construction, Volume 1 (Landcom, 2004). These devices should be inspected regularly and immediately after rainfall to ensure effectiveness over the duration of works. Any damage to erosion and sediment controls should be rectified immediately. Risks associated with the disturbance of any ASS encountered during construction would be managed through an expected finds protocol;
- Development of an Operational Environmental Management Plan (OEMP) to manage and monitor potential operational phase soil and groundwater impacts, such as spills and leakages;
- Groundwater monitoring is undertaken prior and during construction and long term operations to monitor groundwater quality for the site;
- Construction of hardstand areas with appropriately sized bunding around fuel storage and refuelling areas;
- The measures outlined above in Section 1.3.2 should be implemented prior to operations commencing in order to prevent any aquifer, adjacent waterway habitats or site being impacted by infiltration of hydrocarbon contaminated surface runoff or direct product spills.
- Construction of appropriate enclosed and separated clean and oily water drainage systems which shall include the installation and operation of oil/water separators;

- Implementation of regular maintenance inspections/audits during operation; and
- Given the distribution of soil contamination data available for the Site, consideration should be given to undertaking further soil sampling to establish the baseline ground conditions at the Site prior to construction commencing.

5 References

Coffey (2012) *Preliminary Baseline Contamination Assessment – Proposed Biodiesel Facility Inner Harbour, Port Kembla*

Douglas Partners *(2012) Report on Geotechnical Investigation - Proposed Soy Processing and Biodiesel Facility Cnr Tom Thumb Road and Morton Way, Port Kembla*

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

URS (2005) *National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW*

URS (2008) *National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW*

URS (2012) *National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW*

Proposed Port Kembla Bulk Liquids Terminal

APPENDIX A

PREVIOUS REPORTS

Cardno
Shaping the Future

F I N A L R E P O R T

National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW

Prepared for

Maunsell/AECOM

Level 11, 44 Market Street,
Sydney, NSW, 2000

25 September 2008

43217865

URS

Project Manager and Author:

……
Erika Heiden
Environmental Scientist

Project Director:

……
Tom Carmichael
Principle Environmental Scientist

URS Australia Pty Ltd

Level 3, 116 Miller Street
North Sydney
NSW 2060
Australia
Tel: 61 2 8925 5500
Fax: 61 2 8925 5555

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Executive Summary

URS Australia Pty Ltd (URS) was engaged by Maunsell AECOM (Maunsell) on behalf of National Biodiesel Pty Ltd (NB) to assess the potential for contamination of soil and groundwater at NB's proposed soybean processing and biodiesel production facility site within the Port Kembla Inner Harbour area. This report details the results of URS' assessment and is provided in support of an Environmental Assessment being prepared by NB for the proposed facility.

Project Purpose

The primary purpose of URS' assessment was to assess the soil and groundwater conditions present within the subject site, including:

- assess any soil or groundwater contamination, in accordance with the requirements of the Director General of the Department of Planning (DoP) and Department of Water and Energy (DWE);
- consider whether or not there is potential for salinity and acid sulfate soil impacts; and
- make recommendations based on the above findings as to whether the land is suitable for the proposed development.

This report is predicated upon URS' opinion that sufficient investigation of the proposed site(s) and the surrounding area has already been completed to form an opinion that, with adoption of suitable management protocols, the site is suitable for the proposed (industrial) land use.

Scope of Work and Methodology

The scope of work for this contamination assessment comprised the following:

- A site walkover;
- Review of historical reports and data; and
- Reporting of the investigation results.

Site Layout

The site comprises four non-adjoining allotments of land totalling approximately 7.36 ha in area (Maunsell, 2008). The allotments are adjacent to Grain Corp's Port Kembla grain terminal at Farrer Road, Port Kembla.

Geological and Hydrogeological Summary

The Wollongong Geological Series Sheet 9029-9120, 1:100,000 (Department of Mineral Resources and Energy, 1985) indicates that the site is underlain by Quaternary alluvium including estuarine muds, sand and silt.

Soil investigation works completed by URS in November 2005 indicated that the geology under the site consisted of fill material, clay, silty clay and sand. The fill material is comprised of slag and gravel, with some, concrete and sand.

The most recent work conducted by URS in November 2005 indicated that groundwater was encountered at varying elevations across the site, ranging from 0.480 to 8.740 m Australian Height Datum (AHD) within the sand layer. The hydraulic gradient ranged between 0.001 and 0.005**.** The variation in groundwater levels was reported to be most likely due to the varying porosity of the fill material and the fact that the site is reclaimed land. The groundwater elevations indicate that the groundwater flow is generally towards the east.

Executive Summary

Analytical Results Summary

The generally homogenous nature of the fill that caps the Inner Harbour area has been recorded via soil boreholes and installation of monitoring wells, and is visually depicted in geological cross sections (URS, 2004 & URS, 2006). Except for the boundary of allotment 1 (grassed verge area) the site is indicated to contain fill material under allotments 1 and 5.

Soil samples collected from within and in the vicinity of the site by URS in 2005 were analysed for metals/metalloids, volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), benzene/toluene/ethyl benzene/xylenes (BTEX), phenolic compounds, polycyclic aromatic hydrocarbons (PAHs), phthalate esters, organochlorine pesticides, organophosphorous pesticides and polychlorinated biphenyl compounds (PCBs). The reported concentrations of metals were all below applicable guidelines for industrial land use (National Environment Protection (Assessment of Site Contamination) Measure 1999 Investigation Levels - ILs). VOCs were not detected. TPH, BTEX, phenols, phthalate esters, pesticides and PCB were all either not detected, or were detected below guideline concentrations.

Some PAH compounds were detected at concentrations above the ILs. Benzo(a)pyrene exceeded the ILs in 3 samples in MW17 (1.6 mg/kg) to the south of allotment 1, SB1 and SB4 (1.2 and 1.4 mg/kg) to the very northwest of allotment 3. Total PAHs were also exceeded in sample MW17 (24.3 µg/L). No elevated levels of any of the analytes tested were found in the boreholes located on allotment 5 and around allotments 1, 3 and 6.

Groundwater samples collected from the vicinity of the site by URS in 2005 were analysed for metal/metalloids, TPH, BTEX, phenolic compounds and PAHs. The results were compared against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand – ANZECC/ARMCANZ, referred to as ANZECC 2000). The groundwater analytical data show similar concentrations of copper (0.002-0.03 µg/L) and zinc (0.016-0.092 µg/L) slightly exceeding ANZECC 2000 guidelines in nearly every groundwater monitoring well in the vicinity of the site, with the exception of MW14, MW17 and MW20. Concentrations of lead (IHMW2; 0.012 µg/L) and nickel (IHMW8; 0.017 µg/L) slightly exceeding ANZECC 2000 guidelines were also detected.

Arsenic was also detected in many of the wells (IHMW4, IHMW5, IHMW9, MW13, MW14, MW15, MW16, MW20, MW21 and MW22; 0.001-0.006 µg/L) across the area, however no guideline exists for arsenic in marine aquatic ecosystems.

TPH was detected in MW11, MW16 and MW21 (<600 µg/L) however no guideline exists for TPH in marine aquatic ecosystems.

No BTEX or phenols were detected in any of the wells (MW11 to MW22; no data for IHMW1 to IHMW10).

Elevated concentrations above ILs of PAHs were detected in IHMW2 (49 µg/L), MW11 (4.8 µg/L), MW16 (98.2 µg/L), MW21 (20.3 µg/L) and MW22 (8.5 µg/L). Wells IHMW2 and MW11 are located to the very northwest of allotment 3. Well MW16 and MW21 are located adjacent and west of allotment 1. Well MW22 is located on the eastern side of the Western Drain.

At the time of this investigation, no assessment of salinity and acid sulfate soil impacts is known to have been undertaken in the Inner Harbour area. According to the Acid Sulfate Soil Risk Map, Wollongong (9029S2, Department of Land and Water Conservation, Edition 2), the allotments of interest lie within the 'disturbed terrain' class. These include filled areas, as a result of reclamation for development. While there is a low risk of

Executive Summary

ASS where the volume of material to be disturbed is minimal, soil sampling and analysis would be required to further establish the presence of ASS.

The groundwater in the vicinity of the site varies from brackish to moderately saline. No documentation relating to potential salinity impacts on soil in the Inner Harbour has been sighted by URS. URS did not sight visual evidence of salinity impacts upon soil (salt crusts or scalding on the surface), however a more conclusive assessment of the salinity conditions of the soil cannot be made without analyses of the soil salinity. Soil sampling and analysis would be required to further establish the risk of salinity.

Conclusions

On the basis of the results of this assessment and the previous investigations conducted at the site, URS concludes the following:

- The results of soil investigations in 2005 did not detect soil contamination with respect to the following analytes: metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs were detected in soils in the vicinity of the site. Some slightly elevated concentrations of PAH compounds were detected in soil to the very northwest of allotment 3, and to the distant south of allotment 1, however no PAH compounds were detected in soil in close proximity to the allotments of interest.

- No data was available to provide an assessment of the risk of acid sulfate soil or soil salinity at the site. Given the proximity of the site to marine waters, it is considered that there is potential for there to be acid sulfate soil and saline soil at the site.

- The results of groundwater investigations in 2005 indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the NB site.

- Total PAHs exceeded nominated ILs in groundwater samples collected from five monitoring wells. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to (western side) allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

- Based on these findings, the allotments of interest are not considered to be contaminated and are considered suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the allotments of interest have lead to contamination of the surrounding water bodies.

Recommendations

On the basis of the results of this and previous investigations conducted at the site, URS recommends the following:

- Prior to the commencement of site work and in areas were soil disturbance is likely, soil sampling and analysis is required to further establish the presence of ASS and saline soil. Should testing

reveal that either ASS or saline soil is present, then an Acid Sulfate Management Plan and/or a Salinity Management Plan shall be prepared prior to the commencement of site work, and the management measures detailed in that Plan shall be implemented.

Introduction Section 1

1.1 General

URS Australia Pty Ltd (URS) was commissioned by Maunsell AECOM (Maunsell) on behalf of National Biodiesel Pty Ltd (NB) to assess the potential for contamination of soil and groundwater at NB's proposed soybean processing and biodiesel production facility site located within the Port Kembla Inner Harbour area. This report details the results of URS' assessment and is provided in support of an Environmental Assessment being prepared by NB for the proposed facility.

1.2 Project Purpose

The primary purpose of URS' assessment was to assess the soil and groundwater conditions present within the subject site, including:

- assess any soil or groundwater contamination, in accordance with the requirements of the Director General of the Department of Planning (DoP) and Department of Water and Energy (DWE) requirements, as documented in the Environmental Assessment Requirements for application number 08_0083 dated 30 May 2008.
- consider whether or not there is potential for salinity and acid sulfate soil impacts; and
- make recommendations based on the above findings as to whether the land is suitable for the proposed development.

This report is predicated upon URS' opinion that sufficient investigation of the proposed site(s) and the surrounding area has already been completed to form an opinion that, with adoption of suitable management protocols, the site is suitable for the proposed (industrial) land use.

Background Section 2

2.1 Site Identification and Description

2.1.1 General

The investigation area is within the Inner Harbour of Port Kembla, located in the Wollongong Local Government Area, 3 km south of Wollongong **(Figure 1)**. The proposed facility's site is bounded by Tom Thumb Road to its north, Farrer Road to its west, Berth 104 to its south and the Western Drain to its east. The Soybean Processing and Biodiesel Production Facility is to be located on four separate allotments (1, 3, 5 & 6) adjoining and surrounding the existing Grain Terminal (operated by GrainCorp), within an existing heavy industrial precinct, and has a collective area of approximately 7.4 ha **(Figure 2)**.

2.1.2 Site Infrastructure

The allotments of interest are currently vacant and contain no significant infrastructure or vegetation (**Plates 1 to 6)**. Details of the project and the proposed uses of the allotments are provided in Maunsell 2008 (PEA). URS understands that the infrastructure for the proposed facility will generally be at or above ground level, however, there will be some minor excavations for the footings of this infrastructure and associated services.

2.2 Surrounding Land Use

The allotments are surrounded by heavy industry. To the south lies BlueScope Steel operations, to the north the Sydney Water Sewerage Treatment Works, the Port Kembla Coal Terminal is to the east, and BHP packaging and steel products are to the west. The allotments surround GrainCorp operations, including the Grain Terminal, and between allotments 5 and 1 lies a fertilizer storage shed (leased by Incitec Pivot from GrainCorp). The eastern and southern portions of allotment 5 and the south of allotment 1 are bounded by the western drain and the Inner Harbour.

2.3 Site History

The Port Kembla area has a long industrial history. The Inner Harbour, located within this area, was originally part of the Tom Thumb Lagoon. It was filled with blast furnace slag and a casting basin provided for construction of sections of the Sydney Harbour Tunnel during the late 1980s and early 1990s (**Appendix B** contains aerial photographs from 1963 and 2008 illustrating this change). This area was subsequently filled in with blast furnace slag from BHP Steel operations. In the late 1990s Tom Thumb Road and the rail spur were added. Approximately 2 million tonnes of blast furnace slag was used to reclaim and level the area (URS, 2004) which is now present as a relatively homogenous layer across the site **(Figures 6 and 7).**

The Graincorp facility was constructed in 1989 and is dominated by concrete bulk grain silos.

The fertilizer shed on the GrainCorp site was built in 1996 and is sealed with a concrete floor. Deliveries are made into the shed by truck. A building that formerly contained pesticides was located to the southern side of allotment 5, which was decommissioned around 20 years ago. The pesticides Alfacron (azamethiphos) and Roundup (glyphosate) were used to clean out the inside of GrainCorp silos. Only dry packs and no liquids were used during its' operation. Reportedly no asbestos has been used on the area, and there are no oil reservoirs or bulk oil storage areas. Minor quantities of petrol and diesel are used for GrainCorp operations. There have been no known major losses or spills of any drums, pesticides or fire water on the site.

2.4 Physical Setting

2.4.1 Local Topography and Hydrology

The allotments are generally flat and unsealed.

Allotment 1 lies adjacent to Farrer Road, west of the Grain Terminal and south of Tom Thumb Road. It is best described as a grass verge which is bounded by a cyclone wire fence on its western side **(Plate 1).**

Allotment 3 is situated north of Tom Thumb Road and is also grassed **(Plate 2).** This allotment has a gentle fall east to west and from north to south.

Allotment 5 is bounded by the Western Drain to the east, Morton Way and the Grain Terminal to the west, Tom Thumb Road to the north and the Eastern Basin/Inner Harbour to the south **(Plates 3, 4 and 5).** This allotment is relatively flat and is covered by a bitumen pavement with a narrow vegetative strip along the eastern boundary. On the southern end of the eastern boundary, a section of slag fill material has slumped towards the Western Drain, as a result of a broken subterranean pipeline (Maunsell 2008; **Plate 4**).

Allotment 6 is bounded by the rail line to the north, Tom Thumb Road to the south and east and by the Western Drain to the west **(Plate 6).** The allotment contains no significant vegetation and is relatively flat. Allotment 5 and 6 temporarily contain a number of large stock piles of dredged material (obtained from the outer harbour) and gravel, which are to be removed prior to development works. Allotment 6 also contains a stormwater pit which drains to the western drain **(Plate 6).**

2.4.2 Regional Geology

The Wollongong Geological Series Sheet 9029-9120, 1:100,000 (Department of Mineral Resources and Energy, 1985) indicates that the site is underlain by Quaternary alluvium including estuarine muds, sand and silt.

2.4.3 Site Geology

Soil investigation works completed by URS in November 2005 indicated that the geology under the site consisted of fill, clay, silty clay and sand. The generalised geological profile under the site is summarised in the following table.

Geological Profile

Depth (mBGL)	Soil Description
0.0 – 2.0	FILL: Slag, gravel, sand, rock fragments, mostly dry.
0.5 – 2.0	SILTY CLAY: Soft; moist; dark brown; some sand; medium plasticity.
2.0 - 5.5	SAND: Moist; plastic; medium grained; some shells, some clay.
3.4 – 4.4	GRAVEL: Black; some clay; wet.
4.5 – 6.0	SANDY CLAY: black; moist; soft; plastic, some gravel.

mBGL – metres below ground level

Cross sections illustrating the general geology during this work, drawn parallel and transverse to the groundwater flow direction, are presented in **Figures 6** and **7**, respectively.

2.4.4 Regional Hydrogeology

The most recent work conducted by URS in November 2005 indicated that groundwater was encountered at varying elevations, ranging from 0.480 to 8.740 m Australian Height Datum (AHD) within the sand layer. The hydraulic gradient ranged between 0.001 and 0.005 **(Table 1).** The variation in groundwater levels was reported to be most likely due to the varying porosity of the fill material and the fact that the investigation area is reclaimed land. The groundwater elevations indicate that flow is generally towards the east **(Figure 5).**

The total dissolved solids (TDS) concentration in groundwater under the site ranged from 273 mg/L to 12,439 mg/L, which was inferred to be indicative of fresh to saline water **(Table 2).** The high TDS concentrations were concentrated in northern section of the Inner Harbour area, to the north west of allotment 3, and adjacent and south of allotment 1. These TDS concentrations would make the groundwater unsuitable for drinking water, however, may be beneficially abstracted for use in irrigation, livestock watering and for industrial use. There is no known current extraction of groundwater undertaken at the site.

2.5 Previous Investigations

2.5.1 General

To the knowledge of URS, the following investigations have been conducted at and around the site:

- Public Works Department (1984) *May 1984 Port Kembla Grain Terminal Preliminary Geotechnical Investigation for Conceptual Design Report*.
- URS Australia (2004) *Phase II Environmental Site Assessment Port Kembla Port Corporation - Inner and Outer Harbour Port Kembla NSW.*
- URS Australia (2005) *June 2005 Inner Harbour and Outer Harbour Groundwater and Surface Water Assessment Port Kembla Port Corporation - Port Kembla NSW*
- URS Australia (2006) *January 2005 Post Phase 2 Environmental Site Assessment Port Kembla Port Corporation, Inner Harbour Soil and Groundwater Assessment - Port Kembla NSW.*
- Maunsell AECOM (2008) *May 2008 Preliminary Environmental Assessment, Soybean Processing and Biodiesel Production Facility.*

Scope of Work and Methodology | Section 3

3.1 Scope of Work and Methodology

3.1.1 General

The scope of work for this contamination assessment comprised the following:

- A site walkover and discussions with representatives of NB and GrainCorp;
- Review of historical reports and data; and
- Reporting of the investigation results.

4.1 Previous Findings

The soil and groundwater conditions of the Inner Harbour area have been extensively investigated. Approximately 14 soil bores (SB) and 22 monitoring wells (MW) are located around the Inner Harbour **(Figure 2)**. Wells IHMW1 to IHMW10 were installed in November 2003, soil bores SB1 to SB14 and wells MW11 to MW22 were installed in November 2005. Of these well IHMW10 is located within allotment 5, MW15 and MW16 lie at the western boundary of allotment 1, and MW13 lies at the northwest boundary of allotment 3. The remainder of the bores and MWs surround the allotments, mainly to the north, west and south, with two bores (SB13 and SB14) and one well (MW22) located directly to the east of the Western Drain. Boreholes drilled in 1983 (Public Works Department) are also located within this vicinity, however the exact location of these bores could not be established as the site plan was drawn by hand and no distinguishable features could be identified **(Appendix A)**.

Field Groundwater Quality Parameters

A summary of the field parameters and groundwater descriptions is presented in **Table 2**. The most recent results of these measurements are summarised below (URS, 2006);

- Electrical conductivity (EC) ranged from 390 µS/cm (MW22) to 17,770 µS/cm (MW11), which is indicative of fresh to saline groundwater;
- pH ranged from 7.13 (MW21) to 12.46 (MW12), which is indicative of neutral to alkaline groundwater;
- Redox potential (Eh) ranged from -2 mV (MW11) to 318 mV (MW12), which is indicative of oxidising conditions; and
- Dissolved oxygen (DO) was measured at between 2.62 mg/L (MW20) to 10.65 mg/L (MW13).

The high EC readings are concentrated in the eastern and northern parts of the Inner Harbour area (MW11, MW16 and MW20). High pH readings were recorded in monitoring wells MW11, MW12, MW13 and MW14, also located in the northern section of the Inner Harbour area. These readings are consistent to those measured in previous assessments of wells in this area **(Table 2).**

4.2 Investigation Levels

4.2.1 Soil

Analytical results for soil were evaluated against the following investigation levels:

NEPM HILs and EILs - PAHs, Metal / Metalloids, Pesticides and Phenol

The *National Environmental Protection (Assessment of Site Contamination) Measure 1999 Health Based Investigation Levels* (National Environmental Protection Council, 1999) (NEPM HILs) have been developed for a range of land use categories. For each land use type, appropriate generic exposure scenarios and relevant generic exposure factors have been considered in developing a range of investigation levels. URS considered the NEPM HIL Level F (commercial / industrial) an appropriate investigation level for the site based on its current zoning and use.

The NEPM HIL F guideline concentrations are presented in **Table 3**.

TPH and BTEX

The NEPM provides HILs for some aliphatic and aromatic fractions of TPH. However, since the analysis of these TPH fractions is not by the routine method, the *Guidelines for Assessing Service Station Sites* (NSW EPA, 1994) (Service Station Guidelines) are typically used as the investigation levels for C_6-C_9 and C_{10}-C_{36} TPH fractions. The Service Station Guidelines also provide guidelines for BTEX compounds. Since the Service Station Guidelines (soils) have been developed for "*sensitive land use*" (NSW EPA, 1994), they are considered to be very conservative investigation levels for the assessment of a site with an industrial setting. The Service Station Guidelines concentrations for TPH and BTEX are presented in **Table 2**.

4.2.2 Groundwater

The site investigation levels used to evaluate the groundwater analytical results were taken from the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000), National Water Quality Management Strategy, "*Australian and New Zealand Guidelines for Fresh and Marine Water Quality"* (ANZECC, 2000). The ANZECC (2000) guidelines provide Trigger Values for concentrations of organic and inorganic chemicals in freshwater and marine aquatic environments. Due to the location of the site and potential down-gradient receptors, the investigation levels for marine water aquatic ecosystems have been adopted for the site (95% level of protection).

Adopted investigation levels for groundwater are summarised in **Table 13**.

4.3 Historical Soil Results

The generally homogenous nature of the fill that caps the Inner Harbour area has been recorded via soil and MW installations, and is visually depicted in geological cross sections (URS, 2004 & URS, 2006). The most recent of these (URS, 2006) are shown in **Figures 6 and 7**. Cross section B spans allotments 5 and 1 from northwest to southeast, while cross section A spans the western side of allotment 1, from north to south. Except for the boundary of allotment 1 (grassed verge area) the area is indicated to contain fill under allotments 1 and 5 **(Figure 6)**. The northern end of allotment 1 is also indicated to contain fill, while the southern portion contains some natural material (sand and clay; **Figure 7).** Historical bore logs from well and soil bore installations are shown in **Appendix C**.

Metal/metalloids, VOCs, TPH, BTEX, phenolic compounds, PAHs, phthalate esters, organochlorine pesticides, organophosphorous pesticides and PCBs have been analysed for soil samples collected from this area (URS, 2004 & 2006; **Figure 4)**.

- It was found that concentrations of metals were all detected below NEPM guidelines for industrial land use (ILs; **Table 4**).
- VOCs were not detected **(Table 5)**. TPH, BTEX, phenols, phthalate esters, pesticides and PCB concentrations were all either not detected, or were detected below guidelines **(Tables 6, 7, 9, 10 & 11)**.
- Some PAH compounds were detected slightly above guidelines. Benzo(a)pyrene exceeded ILs in 3 samples in MW17 (1.6 mg/kg; to the south of allotment 1), SB1 and SB4 (1.2 and 1.4 mg/kg) to the very northwest of allotment 3; **Figure 4**). Total PAHs were also exceeded in one sample (MW17; 24.3 µg/L).

- No elevated levels of any of the analytes tested were found in the boreholes located on allotment 5 and around allotments 1, 3 and 6.

4.4 Historical Groundwater Results

Metal/metalloids, TPH, BTEX, phenolic compounds and PAHs have been analysed in groundwater in the Inner Harbour (URS, 2006).

- The groundwater analytical data show similar concentrations of copper (0.002-0.03 µg/L) and zinc (0.016-0.092 µg/L) slightly exceeding ANZECC 2000 guidelines in most MWs in the vicinity of the site, with the exception of MW14, MW17 and MW20 **(Table 14; Figure 3)**. Concentrations of lead (IHMW2; 0.012 µg/L) and nickel (IHMW8; 0.017 µg/L) slightly exceeding ANZECC 2000 guidelines were also detected **(Figure 3)**. Arsenic was also detected above the LOR in many of the wells (IHMW4, IHMW5, IHMW9, MW13, MW14, MW15, MW16, MW20, MW21 and MW22; 0.001-0.006 µg/L) across the area, however, no guidelines exist for arsenic in marine aquatic systems.
- Low concentrations of TPH were detected in MW11, MW16 and MW21 (<600 µg/L; **Table 15)** however no guidelines exist for TPH in marine aquatic systems.
- No BTEX or phenols were detected in any of the wells (MW11 to MW22; no data for IHMW1 to IHMW10; **Tables 15 & 16)**.
- Elevated concentrations of PAHs were detected in IHMW2 (49 µg/L), MW11 (4.8 µg/L), MW16 (98.2 µg/L), MW21 (20.3 µg/L) and MW22 (8.5 µg/L; **Figure 3)**. Wells IHMW2 and MW11 are located to the very northwest of allotment 3. Well MW16 and MW21 are located adjacent and west of allotment 1. Well MW22 is located on the eastern side of the Western Drain.

Discussion Section 5

5.1 Extent of Impacts

5.1.1 Soil

A number of soil investigations have been completed in the Inner Harbour area. The geology of the investigation area was found to be fill, comprising blast furnace slag, gravel and sand in the first 2 mBGL, with clay to 4 mBGL and sand up to 5.5 mBGL.

The soil analytical results show no elevated levels of metals, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs across the Inner Harbour area. Some slightly elevated PAH compounds were detected to the very northwest of allotment 3, and to the very south of allotment 1, however no PAH compounds were detected in any of the boreholes/wells located in close proximity to the allotments of interest.

5.1.2 Groundwater

The groundwater elevations from 2006 indicate that flow is generally towards the east, with a hydraulic gradient ranging between 0.001 and 0.005 and groundwater seepage velocity was calculated to be up to approximately 73 m/year.

The groundwater analytical results recorded concentrations slightly above the nominated ILs for copper and zinc across the area, with the exception of MW14, MW17 and MW20. One well recorded an elevated level of lead (IHMW2) and one an elevated concentration of nickel (IHMW8). Concentrations of arsenic (above LOR) were also detected in groundwater samples from all newly (2006) installed monitoring wells. There are no guidelines for arsenic in groundwater applicable to marine ecosystems in the receiving water bodies. The source of these slightly elevated concentrations is reported to result from historical metal contamination of the sediments underlying the inner harbour area, or possibly leaching of fill material (URS, 2006). Where two sets of data are available from the same wells (URS 2004 and 2005), concentrations had either decreased, or had remained the same from 2004 to 2005.

Concentrations of TPH C_{10}-C_{36} were detected in groundwater collected from MW11, MW16 and MW21, however no guidelines exist for TPH in marine aquatic systems.

Total PAHs exceeded nominated ILs in groundwater samples collected from monitoring wells IHMW2, MW11, MW16, MW21 and MW22. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

No BTEX or phenols were detected in groundwater collected from any monitoring wells.

The results from this investigation are consistent with industrial land reclaimed with blast furnace slag based fill material (URS, 2006). In addition, water quality in the Inner Harbour is also affected by urban and industrial runoff from surrounding areas (Maunsell, 2008).

There is no evidence to suggest that the allotments of interest have lead to contamination of the surrounding water bodies. Groundwater samples with metal/metalloid and PAH concentrations above the nominated ILs are moderate to low and are not considered to be significant nor specific to the NB site. Based on these findings, the allotments of interest are not significantly contaminated and, with respect to potential contamination issues, are considered to be suitable for the proposed development.

5.2 Consideration of Acid Sulfate Soil and Salinity Impacts

At the time of this investigation, no assessment of salinity and acid sulfate soil impacts is known to have been undertaken in the Inner Harbour area.

Acid Sulfate soils

Acid sulfate soils (ASS) contain naturally occurring iron monosulfides and disulfides which, when exposed to oxidising conditions, generate sulfuric acid. Exposure to oxidising conditions can occur where disturbance of soil (by excavation or lowering of the water table) is likely to occur. ASS are common in areas of low lying parts of coastal floodplains, rivers and creeks. This includes areas with saline or brackish water, such as coastal flats and tidal areas (ASSMAC 1998) such as the subject site. Sulfidic sediment may be found at any depth in suitable coastal sediments, however they are most usually found beneath the water table (Stone et al., 1998).

As an initial step in establishing weather or not ASS are present on a site, the Acid Sulfate Soils Planning Maps are consulted, and the probability assessed. According to the Acid Sulfate Soil Risk Map, Wollongong (9029S2, Department of Land and Water Conservation, Edition 2), the allotments of interest lie within the 'disturbed terrain' class. These include filled areas, as a result of reclamation for development. While there is a low risk of ASS where the volume of material to be disturbed is minimal, prior to the commencement of site work and in areas where soil disturbance is likely, soil sampling and analysis would be required to further establish the presence of ASS (Stone et al., 1998). Should testing reveal that ASS is present, then an Acid Sulfate Soil Management Plan shall be prepared prior to the commencement of site work and the management measures detailed in that Plan shall be implemented.

Salinity

Dryland salinity can occur on soil which contains high levels of salt. These salts are dispersed to the land surface when subject to a rising watertable. No documentation relating to potential salinity impacts in the Inner Harbour is known to exist and no visual evidence of salinity impacts on the soil has been observed. However, it is considered that there is potential for the soil at the site to be impacted by salinity, particular at depth. Soil sampling and analysis would be required to further assess the risk of salinity at the site.

Prior to the commencement of site works, soil sampling and analysis would be required to further establish the risk of salinity. Should testing reveal that there is a risk of salinity, then a Salinity Management Plan shall be prepared prior to the commencement of site works and the management measures detailed in that Plan shall be implemented.

5.3 Fate and Transport

5.3.1 Potential Sources

Potential primary sources of the contaminant impacts identified at the site comprise the following:

- The most likely source of the elevated concentrations of metals/metalloids in the groundwater in the vicinity of the site is leaching from the imported fill, comprising mostly of blast furnace slag, that has been used to reclaim and level the investigation area; and
- The most likely source of the TPH / PAH contamination is spills and leaks associated with the previous activities conducted on the sites, including the loading, unloading and operation of rail lines.

5.3.2 Pathways and Transport

Potential pathways for the migration of the identified site impacts may include:

- Leaching of metals/metalloids, petroleum hydrocarbons and PAH from soil into groundwater within the shallow sand aquifer.

5.3.3 Potential Receptors

Potential receptors of the identified elevated concentrations of metals/metalloids, petroleum hydrocarbons and PAH include the following:

- Workers conducting excavations at and around the site may be exposed to impacted groundwater and soil;
- Due to the high salinity, the groundwater is not suitable for abstraction for drinking water, but may be suitable for livestock watering (considered unlikely, given the setting), irrigation and industrial purposes; and
- Surface water environments located down gradient of the site (Tom Thumb Lagoon, Port Kembla Harbour and ultimately the Pacific Ocean) receive water discharges from the site.

5.3.4 Fate and Transport Summary

If excavations are of sufficient depth to intercept impacted groundwater or soil, human contact is likely to be incidental and related to short term exposure and appropriate personal protective equipment and hygiene procedures would be sufficient to mitigate any potential risks. There is no evidence to suggest the investigation area has lead to contamination of the surrounding water bodies. Surface water sampling, if conducted, would more fully determine this.

With respect to groundwater given there is unlikely to be any abstraction on the site, the migration of groundwater through the shallow sand aquifer beneath the investigation area is the most likely pathway for potential receptor impact. The observed concentrations are generally moderate to low. Currently there is no indication that significant impacts are occurring or are likely to occur.

Conclusions Section 6

6.1 Conclusions

On the basis of the results of this assessment and the previous investigations conducted at the site, URS concludes the following:

- The results of soil investigations in 2005 did not detect soil contamination with respect to the following analytes: metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs were detected in soils in the vicinity of the site. Some slightly elevated concentrations of PAH compounds were detected in soil to the very northwest of allotment 3, and to the distant south of allotment 1, however no PAH compounds were detected in soil in close proximity to the allotments of interest.

- No data was available to provide an assessment of the risk of acid sulfate soil or soil salinity at the site. Given the proximity of the site to marine waters, it is considered that there is potential for there to be acid sulfate soils and saline soils at the site.

- The results of groundwater investigations in 2005 indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the NB site.

- Total PAHs exceeded nominated ILs in groundwater samples collected from five monitoring wells. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to (western side) of allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

- Based on these findings, the allotments of interest are not considered to be contaminated and are considered suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the allotments of interest have lead to contamination of the surrounding water bodies.

6.2 Recommendations

On the basis of the results of this and previous investigations conducted at the site, URS recommends the following:

- Prior to the commencement of site work and in areas were soil disturbance is likely, soil sampling and analysis is required to further establish the presence of ASS and saline soil. Should testing reveal that either ASS or saline soil is present, then an Acid Sulfate Management Plan and/or a Salinity Management Plan shall be prepared prior to the commencement of site work, and the management measures detailed in that Plan shall be implemented.

Limitations Section 7

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Maunsell/AECOM and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated 10 July 2008.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between 3rd September 2008 and 19th September 2008 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

References Section 8

Maunsell AECOM (2008) *May 2008 Preliminary Environmental Assessment, Soybean Processing and Biodiesel Production Facility.*

Public Works Department (1984) *May 1984 Port Kembla Grain Terminal Preliminary Geotechnical Investigation for Conceptual Design Report*.

Stone, Y., Ahern C.R., and Blunden, B. 1998. *Acid Sulfate Soil Manual 1998*. Acid Sulfate Soil Management Advisory Committee, Wollongbar, NSW, Australia.

URS Australia (2004) *Phase II Environmental Site Assessment Port Kembla Port Corporation - Inner and Outer Harbour Port Kembla NSW.*

URS Australia (2005) *June 2005 Inner Harbour and Outer Harbour Groundwater and Surface Water Assessment Port Kembla Port Corporation - Port Kembla NSW*

URS Australia (2006) *January 2005 Post Phase 2 Environmental Site Assessment Port Kembla Port Corporation, Inner Harbour Soil and Groundwater Assessment - Port Kembla NSW.*

Plates

Plates

Plate 1. Allotment 1 looking south towards the Inner Harbour.

Plates

Plate 2. Allotment 3 looking northwest.

Plate 3. Allotment 5 looking north. Turbines are temporarily stored on this allotment to the west.

Plates

Plate 4. Allotment 5 slumping of fill material, looking north.

Plate 5. Allotment 5 looking south. Stockpiles of dredged material and gravel are temporarily stored on this allotment. The GrainCorp silos are to the southwest.

Plate 6. Allotment 6 facing north. The stormwater pit is in the foreground, and a large stockpile of gravel is present to the north.

Tables

Figures

Borehole Locations 1983

Appendix A

Aerial Photographs

Appendix B

Historical Bore Logs

Appendix C

Historical Bore Logs

Appendix C

URS

MONITORING WELL IHMW1

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

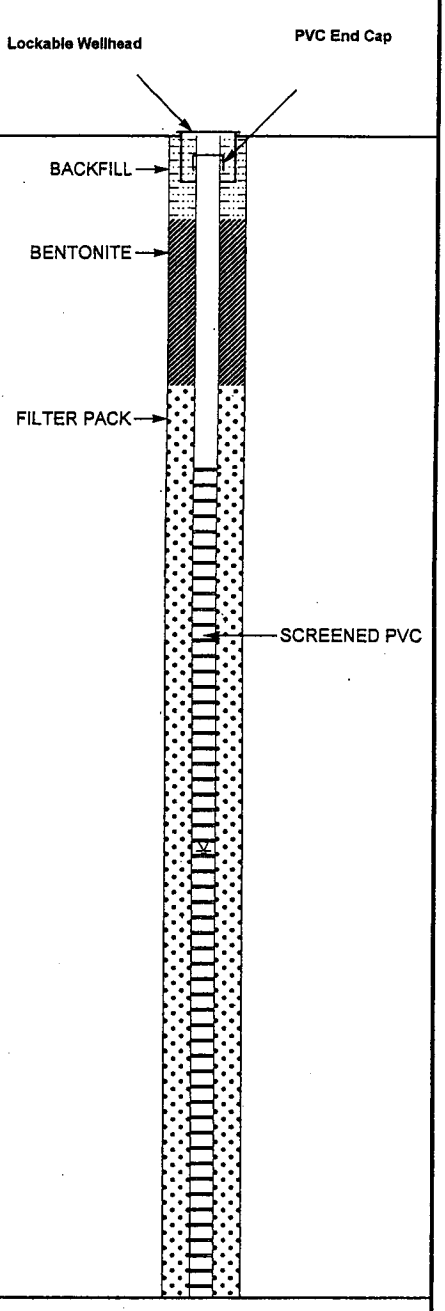
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: GB	Bore Size: 150 mm	Relative Level: mRL	Drill Type: Edson 3000
Checked By:	Total Depth: 7.00 m	Coordinates: mN	Drill Model:
Date Started: 12-11-03	Casing Size: 50 mm	mE	
Date Finished: 12-11-03		Permit No:	Drill Fluid: NA

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				FILL: slag; gravel.		0	
G	1.2	IHMW1_0.4-0.5		Silty CLAY: brown mottling grey; firm; moderate plasticity; moist; traces of shell, gravel and sand lenses.			M
	0.2	IHMW1_0.9-1.0				1	
	2.7	IHMW1_1.9-2.0		As above: increasing sand content.		2	
	4.7	IHMW1_3.0-3.1		Sandy CLAY: firm; nonplastic; firm; moist; with sand, shells, and organic matter..		3	M
	1.2	IHMW1_3.9-4.0		Sandy CLAY: black / dark brown; firm; moist/wet; traces of marine matter.		4	W
	0.3	IHMW1_4.9-5.0 QC5, QC6		GRAVEL: black; wet; some clay content.		5	W
				Silty CLAY: with some sand content; brown mottling grey; soft; moderate to high plasticity; traces of marine and organic matter.		6	
	0.5	IHMW1_6.9-7.0				7	
				EOH@7.0m. End of investigation.			

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL IHMW2

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

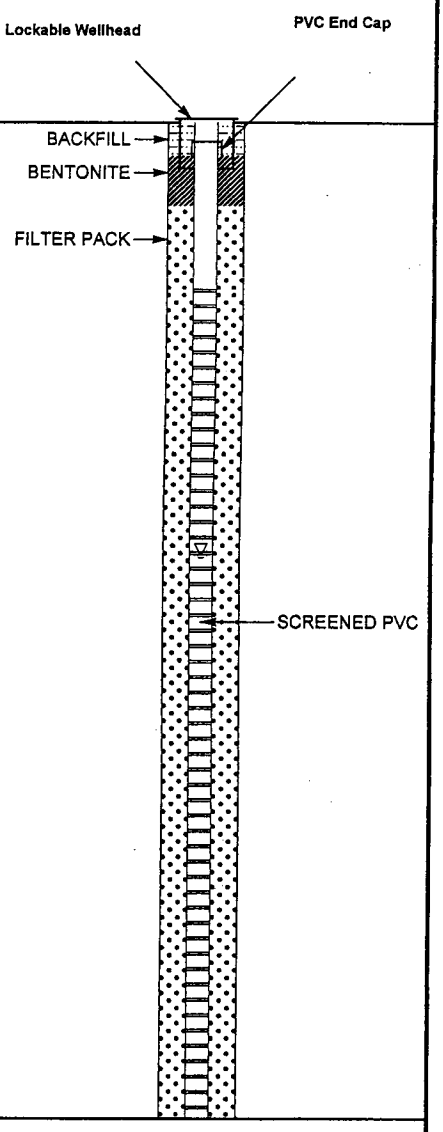
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.4	IHMW2_0.3-0.4		FILL: black; slag; gravel; soil; wet; rock pieces.		0	W
	0.6	IHMW2_0.9-1.0				1	
	1.9	IHMW2_1.9-2.0		CLAY: dark grey; silty; loose; soft; moderate to high plasticity; wet.		2	W
	0	IHMW2_2.9-3.0		As above.		3	
	0	IHMW2_3.9-4.0		As above.		4	
	0	IHMW2_4.9-5.0		Silty CLAY: black / grey; soft; high plasticity; saturated.		5	W
	0.5	IHMW2_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW3

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

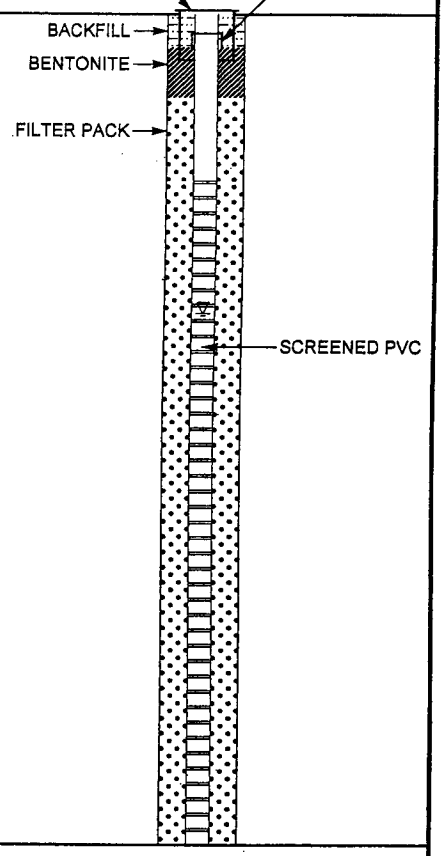
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **5.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **11-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **11-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	4.3	IHMW3_0.4-0.5		FILL: Gravel; slag; sand; pieces of rock; some moisture.		0	M
	2.1	IHMW3_0.9-1.0		As above: grey; dry.		1	D
	1.3	IHMW3_1.9-2.0		FILL: gravel; slag; sand; saturated.		2	W
	1.6	IHMW3_2.9-3.0		Silty CLAY: grey / black; organic; saturated; traces of marine matter.		3	W
	2.3	IHMW3_3.9-4.0 / QC1, QC2		SAND: grey; some silty clay; saturated; soft; some shell pieces.		4	W
	0.8	IHMW3_4.9-5.0		EOH@5.0m. End of investigation.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW4

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **11-11-03**
Date Finished: **11-11-03**

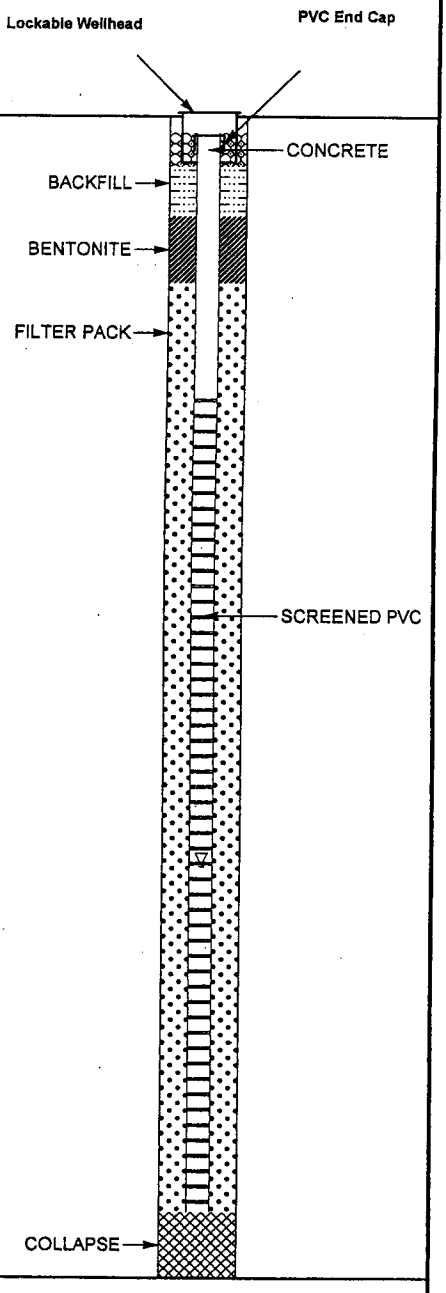
Bore Size: **150 mm**
Total Depth: **7.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	2.2	IHMW4_0.4-0.5		FILL: slag; grey; some pieces of rock and gravel; some sand.		0	
	5.7	IHMW4_0.9-1.0		CLAY: brown; moist; mottling grey; organic odour; moderate to high plasticity; soft.		1	M
	6.5	IHMW4_1.9-2.0		Sandy CLAY: brown; moist; moderate plasticity; soft.		2	M
	0	IHMW4_2.9-3.0		As above with some increasing sand content.		3	
	2.1	IHMW4_3.9-4.0		SAND: grey; loose; moist.		4	M
	3.7	IHMW4_4.9-5.0		SAND: grey; saturated; traces of sandy clay. As above.		5	W
	2.7	IHMW4_5.9-6.0		SAND: brown; saturated with sandy clay; traces of marine matter.		6	W
	2.8	IHMW4_6.9-7.0		As above. EOH@7.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW5

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

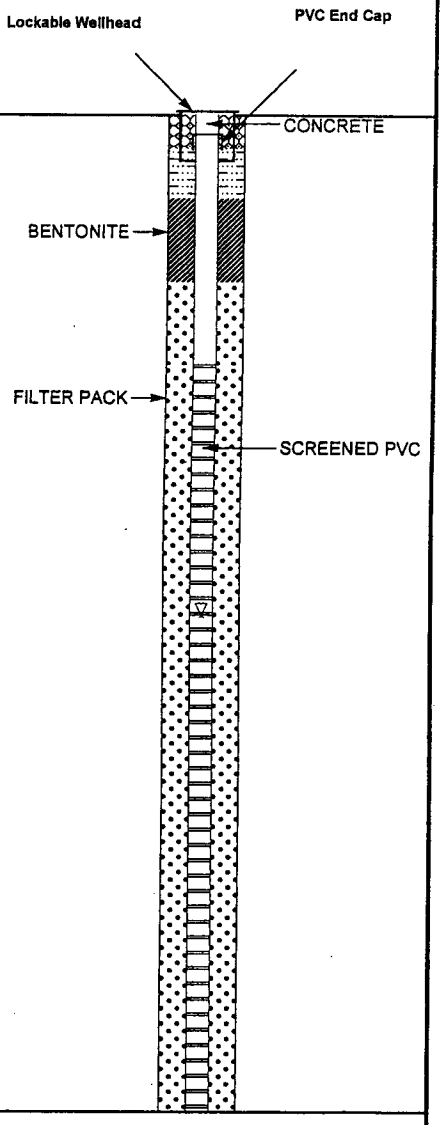
Location:

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **6.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **17-11-03**	Casing Size: **mm**	**mE**	Drill Fluid: **NA**
Date Finished: **17-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	7.7	IHMW5_0.3-0.4/ QC13, QC14		FILL: grey / blue; slag; gravel; sand; broken rock pieces.		0	
	26.1	IHMW5_1.9-2.0		FILL: clay; grey / black; gravel and slag; moist.		2	M
	28.2	IHMW5_2.9-3.0		FILL: grey / black; gravel; slag; rock fragments; clay; wet.		3	W
				Silty CLAY: grey; soft; moderate plasticity; traces of sand.		4	
	17.8	IHMW5_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

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MONITORING WELL IHMW6

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

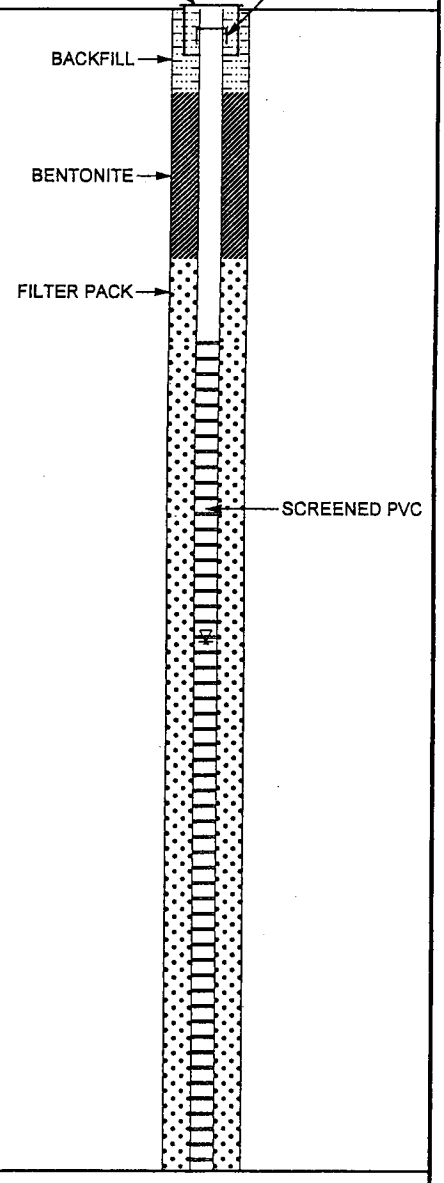
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **7.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **13-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **13-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.7	IHMW6_0.3-0.4		FILL: gravel; slag; sand.		0	
	1.7	IHMW6_0.9-1.0		CLAY: brown; mottling grey; firm; moderate plasticity; moist.		1	M
	1.1	IHMW6_1.9-2.0				2	
	1.7	IHMW6_2.9-3.0		Silty CLAY: brown; firm; moderate to high plasticity; moist.		3	M
	0.5	IHMW6_3.9-4.0		Silty CLAY: brown; soft; moderate to high plasticity; wet.		4	W
	2.8	IHMW6_4.9-5.0 QC7, QC8		Silty CLAY: brown; soft; high plasticity; very sticky; wet.		5	W
	0.2	IHMW6_5.9-6.0		As above: dark grey and saturated.		6	W
	1.7	IHMW6_6.9-7.0		Silty CLAY: dark grey; some sand; high plasticity; soft.		7	

WELL CONSTRUCTION DETAILS



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MONITORING WELL IHMW7

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

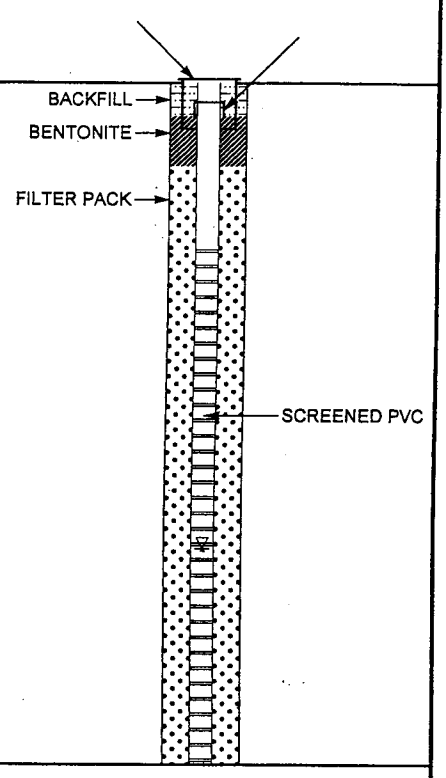
Bore Size: **150 mm**
Total Depth: **4.10 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.9	IHMW7_0.4-0.5		FILL: slag; gravel sand; moist.		0	M
	1.7	IHMW7_0.9-1.0 / QC3, QC4				1	
				FILL: clay reworked with some slag and gravel.			
	0.8	IHMW7_1.9-2.0				2	
	1.9	IHMW7_2.9-3.0		FILL: black; gravel; slag; clay; wet.		3	W
	2.1	IHMW7_3.9-4.0				4	
				EOH@4.1. Refusal.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL IHMW8

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Location:

Logged By: **GB**
Checked By:
Date Started: **17-11-03**
Date Finished: **17-11-03**

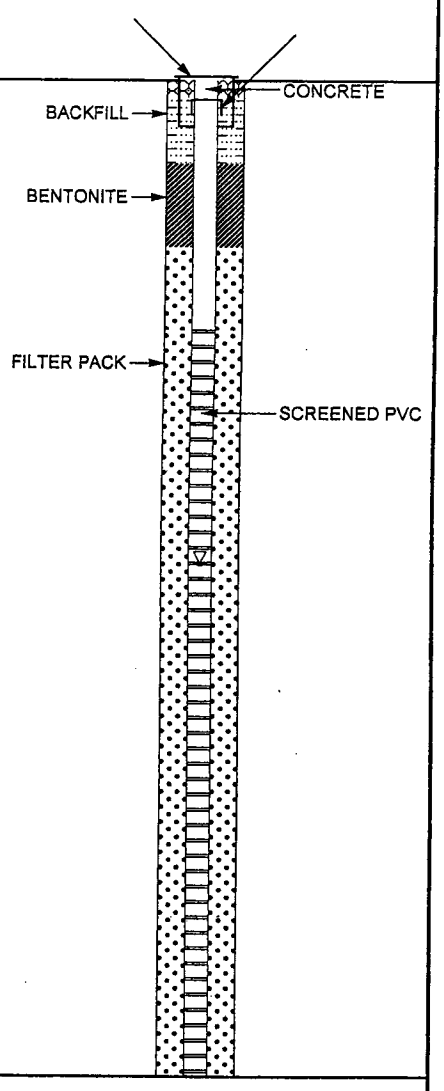
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	6.4	IHMW8_0.3-0.4		FILL: clay; slag; sand; gravel.		0	
				As above.		1	
	17.6	IHMW8_1.9-2.0		Silty CLAY: grey / black; firm; moderate plasticity; moist.		2	M
	17.1	IHMW8_2.9-3.0				3	
						4	
	14.5	IHMW8_4.9-5.0 QC15, QC16		Silty CLAY: black; grey; soft; high plasticity; wet.		5	W
				EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 28-01-04

URS

MONITORING WELL IHMW9

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Project No.: **52735-002**

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Logged By: **GB**
Checked By:
Date Started: **11-11-03**
Date Finished: **11-11-03**

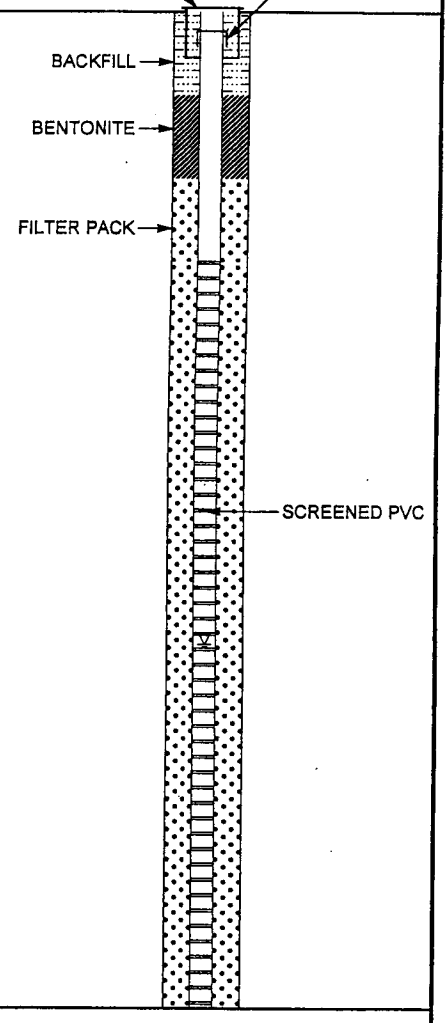
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	1.4	IHMW9_0.4-0.5		FILL: slag; black; gravel; sand; rocks; dry.		0	D
	0.2	IHMW9_0.9-1.0				1	
	1.2	IHMW9_1.9-2.0		SAND: brown; loose; moist; traces of marine matter.		2	M
	0.7	IHMW9_2.9-3.0				3	
	1.5	IHMW9_3.9-4.0		SAND: grey; loost; wet; soft; traces of marine matter.		4	W
	1.9	IHMW9_4.9-5.0		As above: grey / black; saturated; soft; loose.		5	
	2.6	IHMW9_5.9-6.0		CLAY: dark grey; silty; loose; soft; moderate to high plasticity; wet.		6	W
				EOH@6.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW10

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

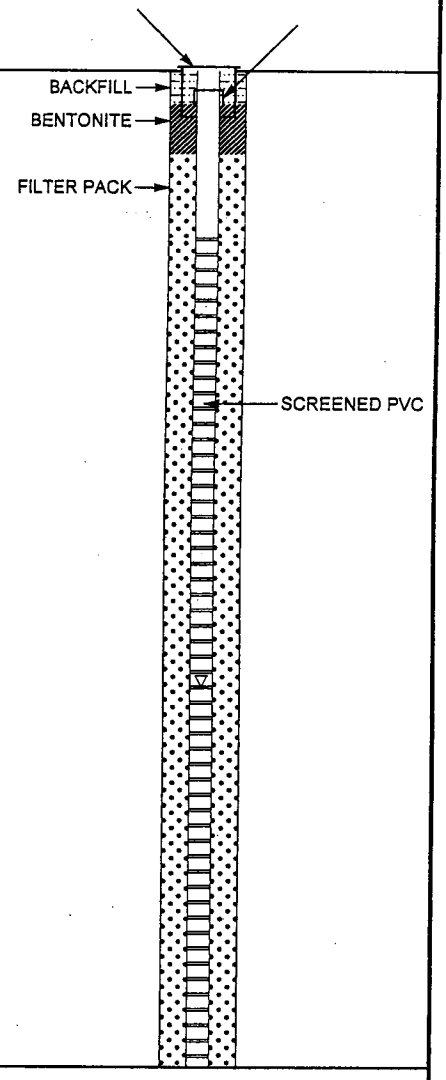
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	2.4	IHMW10_0.3-0.4		FILL: grey; slag; gravel; sand; dry.		0	D
	1.5	IHMW10_0.9-1.0				1	
				SAND: brown; loose; moist.			M
	1.5	IHMW10_1.9-2.0				2	
	1.1	IHMW10_2.9-3.0				3	
	1.9	IHMW10_3.9-4.0		SAND: grey; loose; wet; traces of marine matter.		4	W
	2.2	IHMW10_4.9-5.0		SAND: grey; loose; saturated; marine matter.		5	
	3.2	IHMW10_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



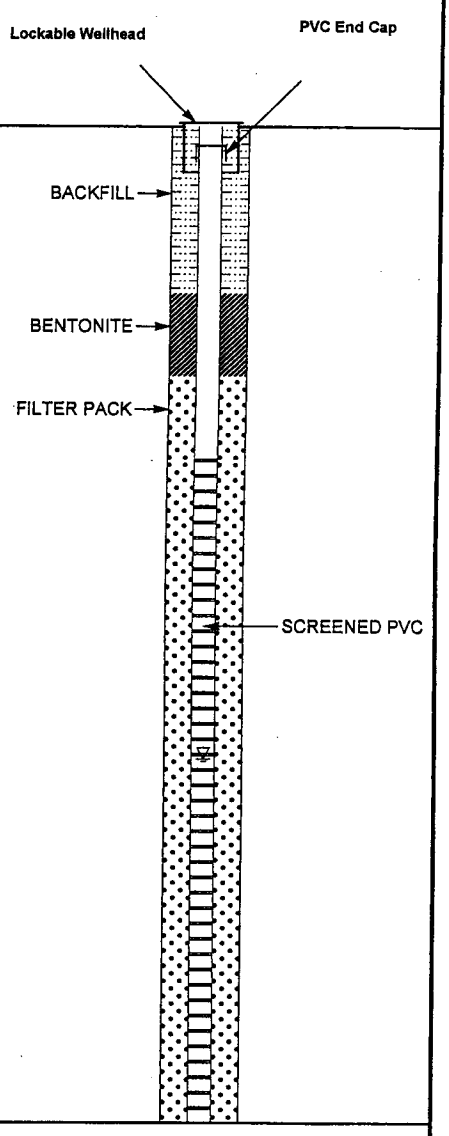
WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

MONITORING WELL OHMW21

URS Australia Pty. Ltd. Level 3, 116 Miller Street, North Sydney	Phone 02 8925 5500 Fax 02 8925 5555	Project Reference:	Client: **Port Kembla Ports**
Drilling Contractor: **Terratest, Engineering Exploration**		Project No.: **52735-002**	Location:
Logged By: **GB** Checked By: Date Started: **13-11-03** Date Finished: **13-11-03**	Bore Size: **150 mm** Total Depth: **6.00 m** Casing Size: **mm**	Relative Level: **mRL** Coordinates: **mN** **mE** Permit No:	Drill Type: **Edson 3000** Drill Model: Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.3	OHMW21_0.3-0.4		FILL: slag; reworked clay; rocks; gravel; sand.		0	
				SAND		1	
				Sandy CLAY: matural; moderate plasticity; moist.		2	M
				SAND: orange; some yellow; loose; moist.			M
	0.5	OHMW21_2.9-3.0				3	
				SAND: grey / brown; saturated; shells.		4	W
						5	
	0.2	OHMW21_5.9-6.0				6	
				EOH@6.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL OHMW22

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **13-11-03**
Date Finished: **13-11-03**

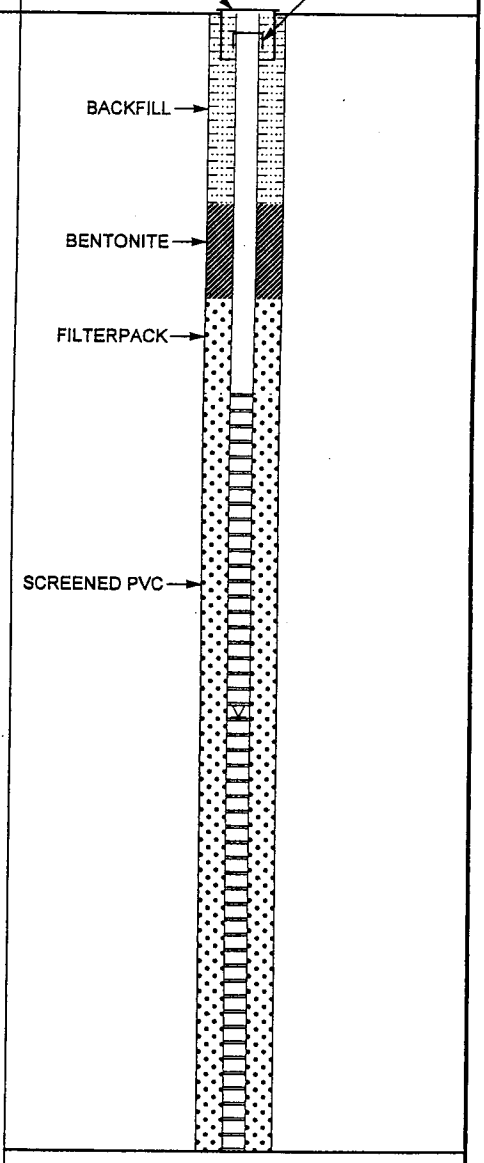
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				FILL: gravel; black; rocks; slag; sand; soil; dry.		0	D
	2.2	OHMW22_0.3-0.4 QC9, QC10				1	
				CLAY: brown; firm; moderate plasticity; moist.		2	M
				SAND: yellow; loose; moist.		3	M
	2.2	OHMW22_2.9-3.0				4	
				SAND: grey; shell; loose; saturated.		5	W
	.9	OHMW22_5.9-6.0				6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 04-02-04

MONITORING WELL OHMW23

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

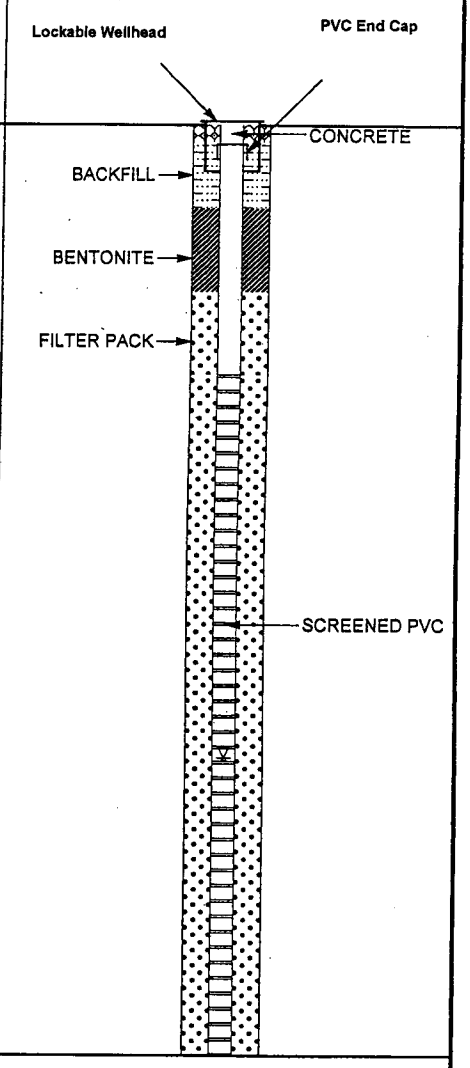
Bore Size: **150 mm**
Total Depth: **5.60 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	1.1	OHMW23_0.3-0.4		FILL: slag; gravel; sand; broken rock pieces.		0	
						1	
						2	
	1.4	OHMW23_2.9-3.0		SAND: orange; loose; moist.		3	M
						4	
				SAND: grey; saturated; shells.		5	W
	0.8	OHMW23_5.5-5.6		EOH@5.6m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW24

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Project No.: **52735-002**

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Logged By: **GB**
Checked By:
Date Started: **13-11-03**
Date Finished: **13-11-03**

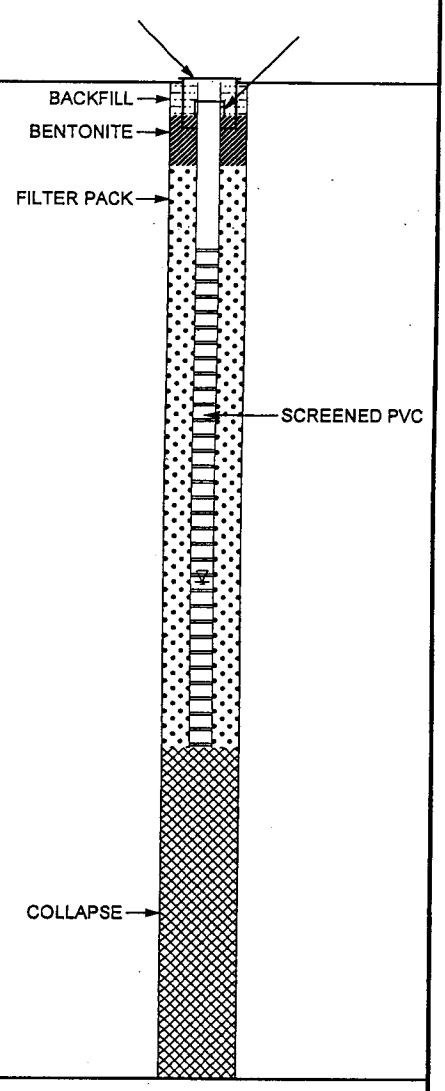
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.7	OHMW24_0.3-0.4		FILL: black; dry; gravel; slag.		0	D
	1.1	OHMW24_0.9-1.0				1	
				SAND: loose; moist.		2	
				Sandy CLAY: brown; soft; moderate plasticity; moist.			M
	0.5	OHMW24_2.9-3.0		Gravelly CLAY: black; firm; non plastic; moist.		3	M
				SAND: brown; loose; saturated; shells.			W
						4	
						5	
	1.6	OHMW24_5.9-6.0				6	
				EOH@6.0m. End of investigation.			
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW26

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

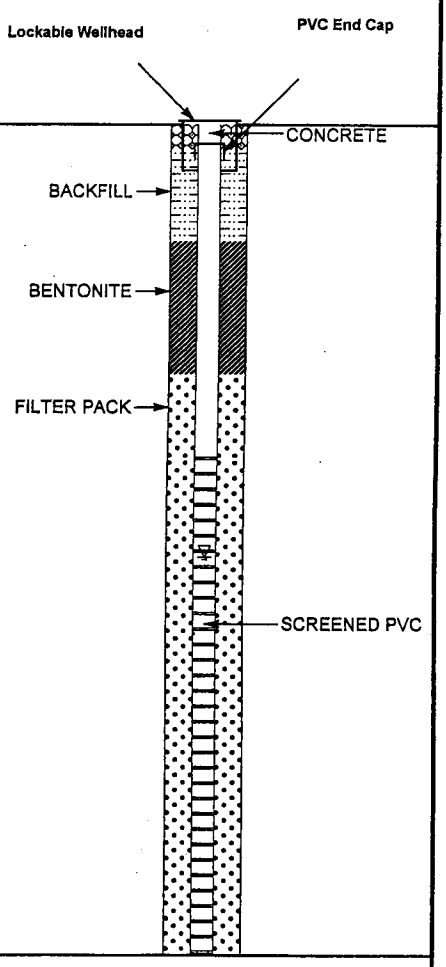
Bore Size: **150 mm**
Total Depth: **5.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.5	OHMW26_0.4-0.5		FILL: brown; slag; gravel; sand; rock fragments; traces of clay; moist.		0	M
				FILL: with increasing clay content.		1	
				Sandy CLAY: moderate plasticity; moist.		2	M
				SAND: brown; loose; wet.			W
	1.1	OHMW26_2.9-3.0				3	
						4	
	0.4	OHMW26_4.9-5.0				5	
				EOH@5.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW27

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

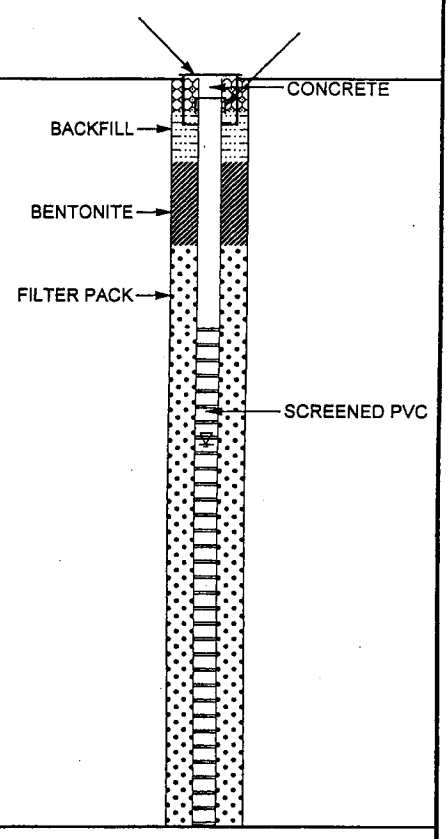
Bore Size: **150 mm**
Total Depth: **4.50 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.7	OHMW27_0.4-0.5		FILL: slag; gravel; rock fragments; moist.		0	M
				SAND: orange; loose; moist.		1	M
						2	
	0.2	OHMW27_2.9-3.0		SAND: orange; brown; saturated.		3	W
						4	
				EOH@4.5m. End of investigation.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

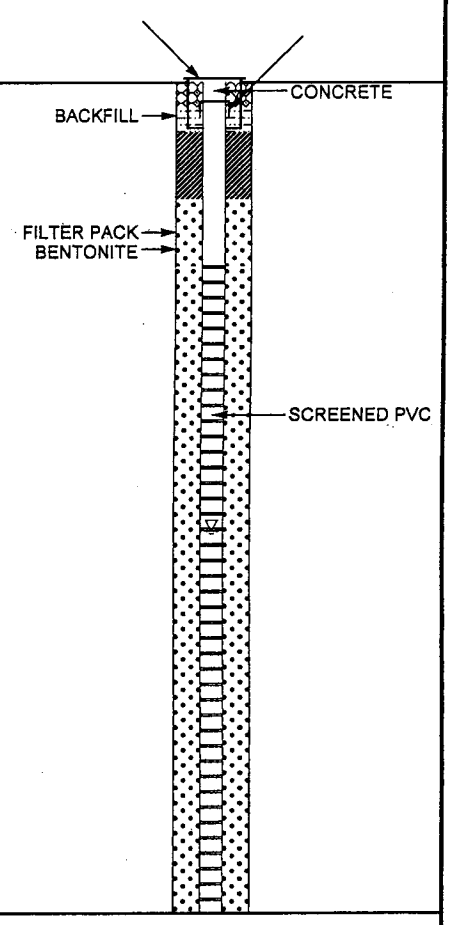
MONITORING WELL OHMW28

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Drilling Contractor: **Terratest, Engineering Exploration**		Project Reference:	Client: **Port Kembla Ports**
		Project No.: **52735-002**	Location:
Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **5.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **14-11-03**	Casing Size: **mm**	**mE**	Drill Fluid: **NA**
Date Finished: **14-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	6.1	OHMW28_0.4-0.5/ QC11, QC12		FILL: sand; gravel; slag; rock fragments; dry.		0	D
						1	
				SAND: brown; loose; moist.			M
						2	
	22.5	OHMW28_2.9-3.0				3	
				SAND: brown; loose; saturated; shells.			W
						4	
	7.9	OHMW28_4.9-5.0				5	
				EOH@5.0m. End of investigation.			
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW29

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **17-11-03**
Date Finished: **17-11-03**

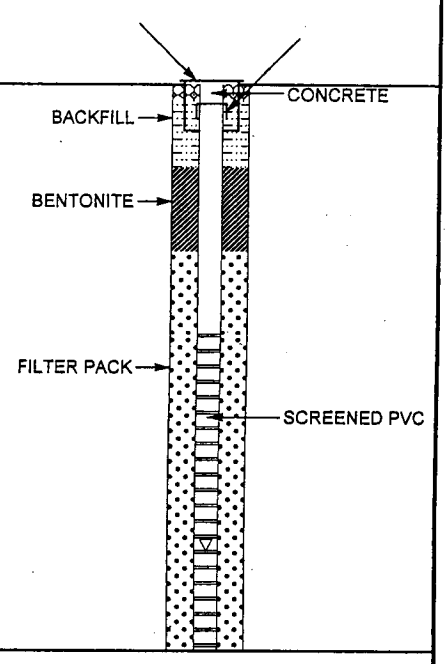
Bore Size: **150 mm**
Total Depth: **3.40 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	40.2	OHMW29_0.3-0.4		FILL: topsoil; sand; gravel; rock figments.		0	
				FILL: large rock fragments; tennis ball size.		1	
						2	
				Silty CLAY: brown; soft; moderate plasticity; wet.		3	W
	5.2	OHMW29_2.9-3.0					
				EOH@3.4m. Refusal on rock.		4	
						5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 28-01-04

URS

MONITORING WELL OHMW30

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

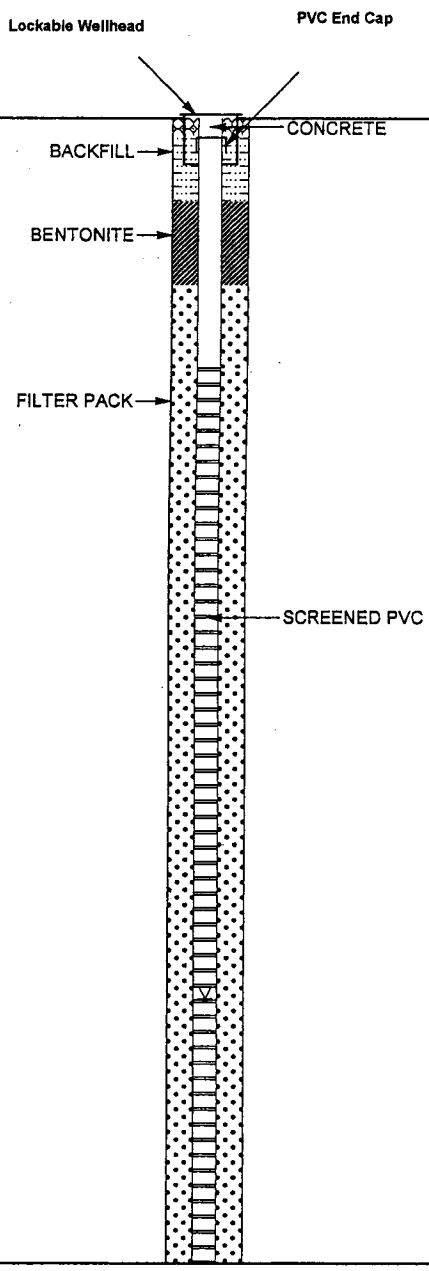
Bore Size: **150 mm**
Total Depth: **6.90 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN** **mE**
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)
	0	OHMW30_0.3-0.4		FILL: gravel; rocks; slag (grey dust); sand.		0
				FILL: clay; black / brown; low plasticity; moist; gravels.		2
	0.1	OHMW30_2.9-3.0		FILL: Black, moist, wood, possible railway sleepers, old automobil tyres.		3
				SAND: brown; loose; wet.		4
				SAND: brown; saturated; loose.		6
	1.1	OHMW30_6.4-6.5				
				EOH@6.9m. End of investigation.		7

WELL CONSTRUCTION DETAILS



WELL_MELB LOGS.GPJ WCC_AUS.GDT 04-02-04

MONITORING WELL MW11

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

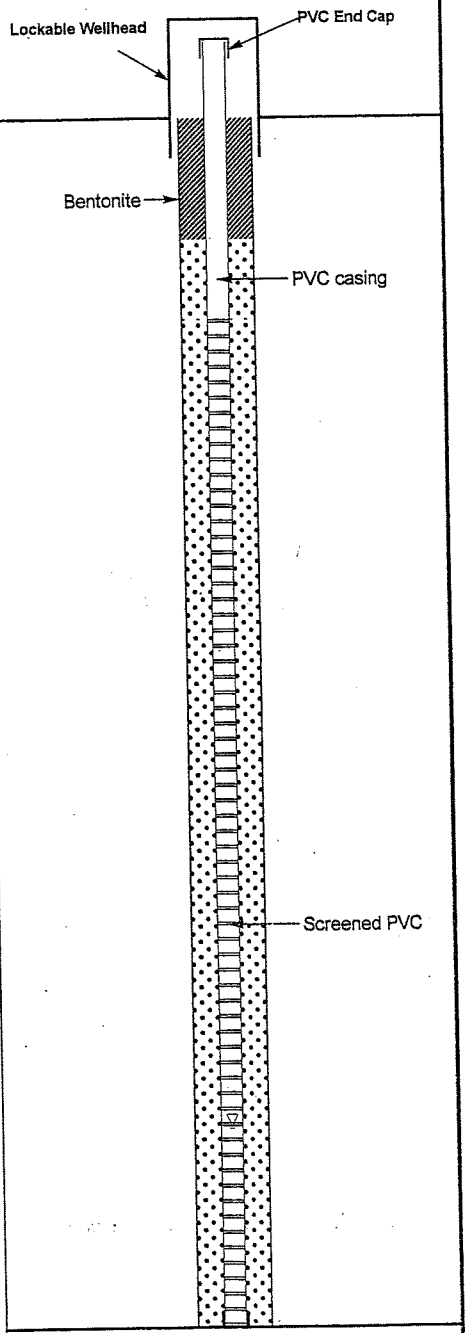
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 9.26 mAHD
Coordinates: 1187125.53 N
289751.15 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Asphalt/gravel	Asphalt	0	
				FILL: slag; black; gravel	Fill		
	0.7	MW11_0.8-1.0		Silty CLAY: soft; moist; dark brown; some sand; medium plasticity	CL	1	M
	9	MW11_1.8-2.0		Clayey SAND: moist; plastic; medium grained; some shells	SC	2	M
	9	MW11_2.8-3.0		SAND: with some clay; medium grained; loose; moist	SC	3	M
	0.5	MW11_3.8-4.0		Sandy CLAY: black; moist; soft; plastic	CL	4	M
	0	MW11_4.8-5.0				5	
				End of Hole		6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

MONITORING WELL MW12

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

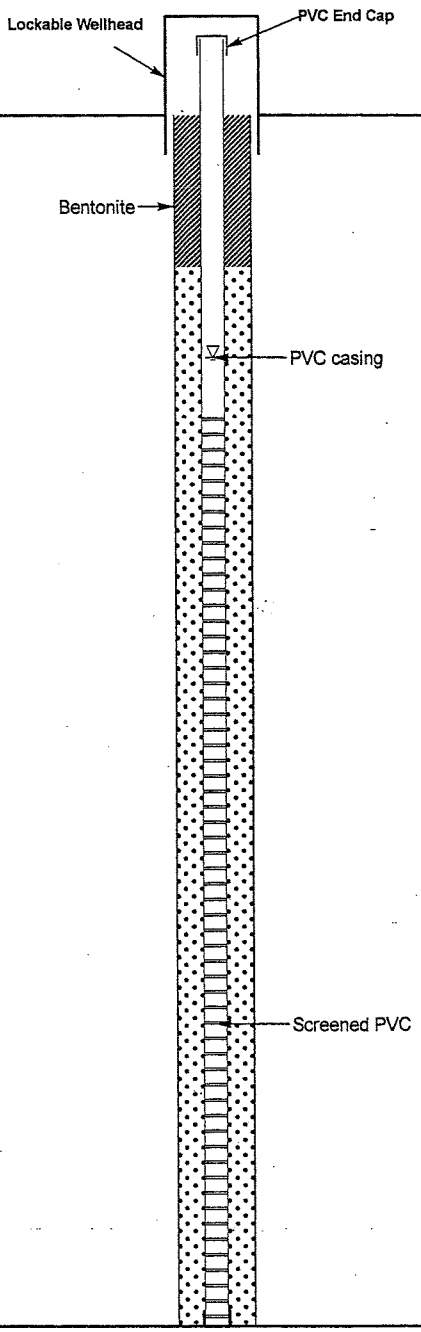
Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 9.82 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: 1187045.44 N	Drill Model: Eelson 3000
Date Started: 07-11-05	Casing Size: mm	289933.54 E	Drill Fluid: none
Date Finished: 07-11-05		Permit No:	

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
			FILL: slag; grey/black; gravel	Fill	0	
			Clayey GRAVEL: clay/gravel mix; grey; wet; soft	GC	1	W
			Clay/gravel mix; black; wet; soft	GC		W
1.1	MW12_0.8-1.0				2	
1.5	MW12_1.8-2.0				3	
9.3	MW12_2.8-3.0				4	
			End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW13

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

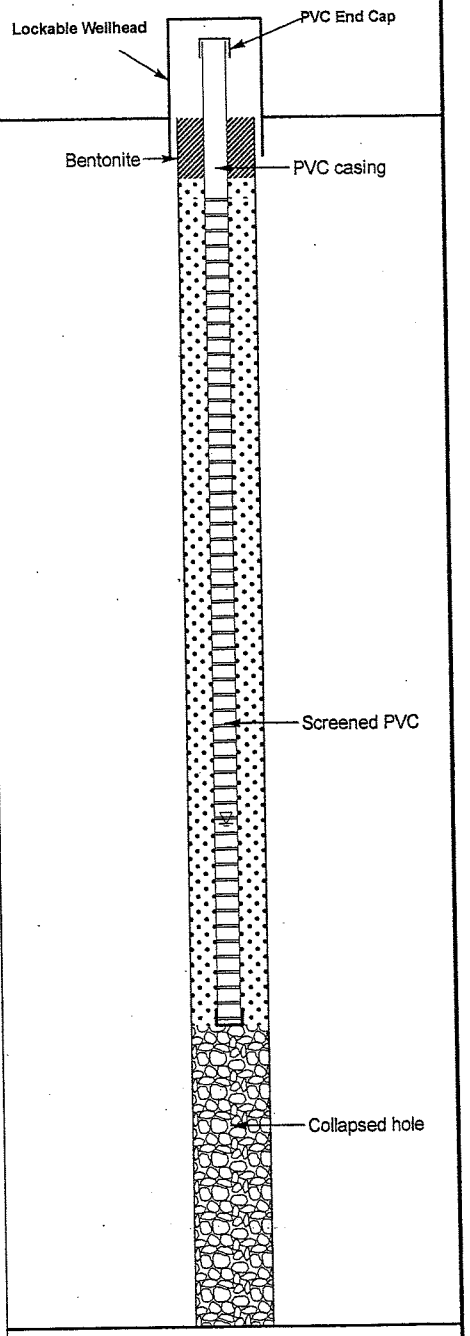
Relative Level: 7.21 mAHD
Coordinates: 1186703.48 N
289999.46 E
Permit No:

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				FILL: slag; black; gravel; dry	Fill	0	D
	0	MW13-0.5-0.7					
	0	MW13-0.9-1.1				1	
	1.6	MW13-1.8-2.0		SAND: brown; medium grained; loose; moist	SW	2	M
				Sandy CLAY: non-plastic; black; moist	CL		M
	1.1	MW13-2.9-3.0				3	
				GRAVEL: black; with some clay; wet	GC		W
	0.1	MW13-3.8-4.0				4	
				Gravelly CLAY: non-plastic; black; moist/wet	GC		M/W
	0.7	MW13-4.8-5.0				5	
				End of Hole		6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

MONITORING WELL MW14

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

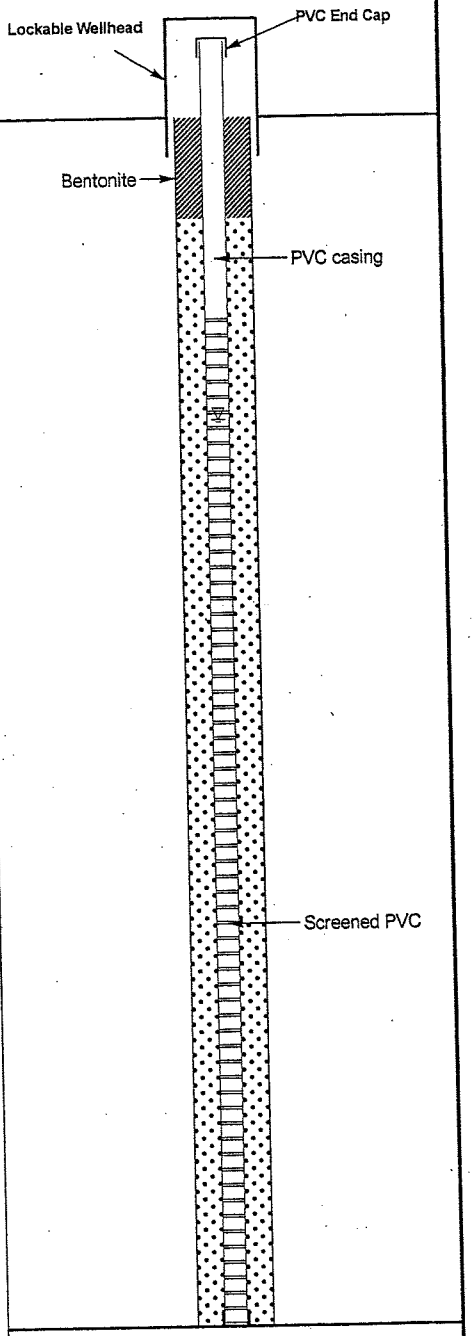
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 9.03 mAHD
Coordinates: 1186856.26 N
289628.51 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				Sandy CLAY: plastic; brown; stiff; wet	CL		W
	1	MW14_0.8-1.0				1	
	1	MW14_1.8-2.0		Silty CLAY: soft; plastic; increase in water; grey	CL	2	W
				increase in sand, soft clay	CL		
	1.2	MW14_2.8-3.0				3	
	1.5	MW14_3.8-4.0				4	
	0.8	MW14_4.8-5.0				5	
	8.3	MW14_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



MONITORING WELL MW15

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

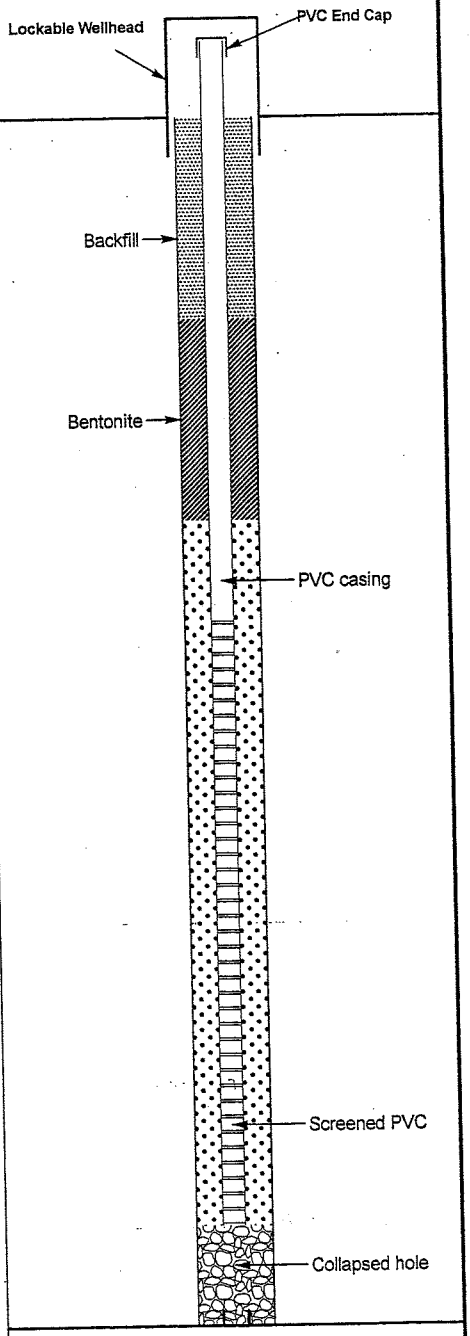
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 6.15 mAHD
Coordinates: 1186365.37 N
289927.58 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Grass		0	
	2.8	MW15_0.4-0.5		CLAY: brown; stiff; some roots	CL		
	5	MW15_0.9-1.0		SAND-CLAY mixture: dark brown; soft; plastic; moist	SC	1	M
	4.6	MW15_1.8-2.0		Sandy CLAY: dark brown; soft; plastic; moist	SC	2	M
	5.3	MW15_2.8-3.0		SAND: brown; loose; medium grained (beach sand)	SW	3	
	5	MW15_3.8-4.0				4	
	4.3	MW15_4.8-5.0		SAND: saturated; light brown/brown mix; some clay; medium grained; loose	SW	5	W
	5.8	MW15_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

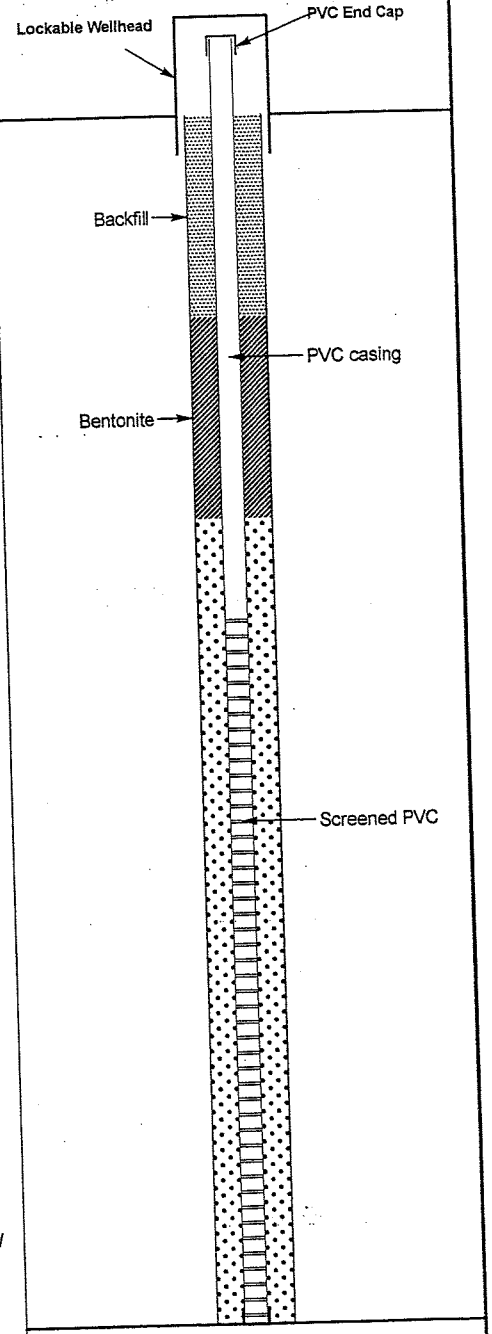
MONITORING WELL MW16

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2	Client: Port Kembla Port Corporation
		Project No.: 43217296	Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 6.42 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 6.00 m	Coordinates: 1186202.24 N	Drill Model: Eelson 3000
Date Started: 09-11-05	Casing Size: mm	289932.38 E	Drill Fluid: none
Date Finished: 09-11-05		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Grass		0	
	0.7	MW16_0.4-0.5		SAND: dark brown; medium grained; dry	SW		D
	0.4	MW16_0.9-1.0		Clayey SAND: non-plastic; loose; medium grained; moist	SC	1	M
	0.6	MW16_1.8-2.0				2	
	3.5	MW16_2.8-3.0				3	
				SAND: brown; medium grained; moist; loose	SW		M
	2.5	MW16_3.8-4.0				4	
	5	MW16_4.8-5.0				5	
				wet; some organic sludge (black)			W
	0	MW16_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW17

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

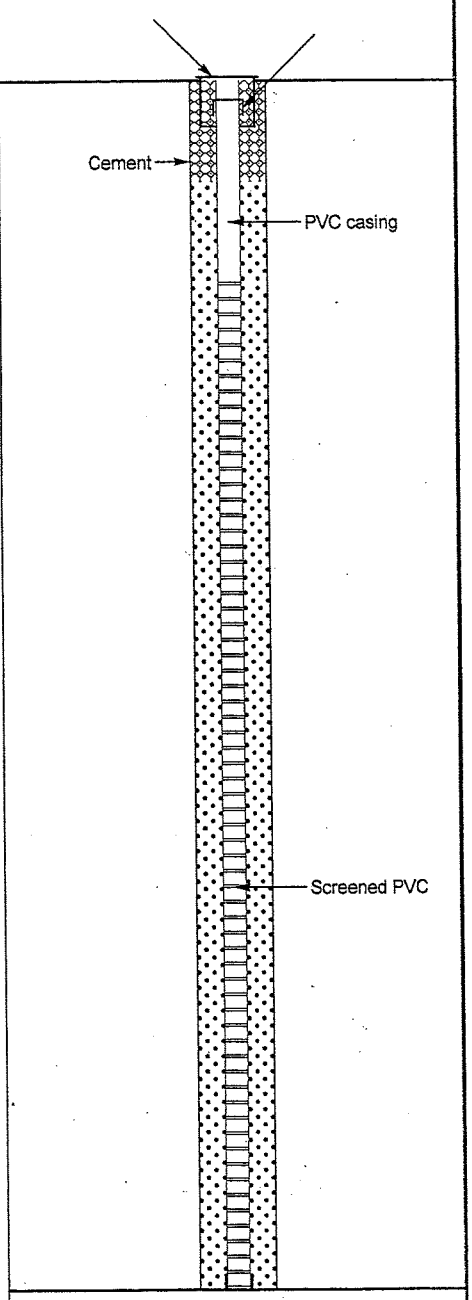
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: mAHD
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				Concrete	Concrete		
				Beach SAND: light brown; medium grained	SW		
	1.2	MW17_0.8-1.0				1	
				SAND: saturated sand; black; some shells; medium grained	SW		W
	1.2	MW17_1.8-2.0 QC05				2	
	0.5	MW17_2.8-3.0		increase in shells		3	
	1.8	MW17_3.8-4.0				4	
	1.3	MW17_4.8-5.0				5	
				End of Hole		6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

MONITORING WELL MW18

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

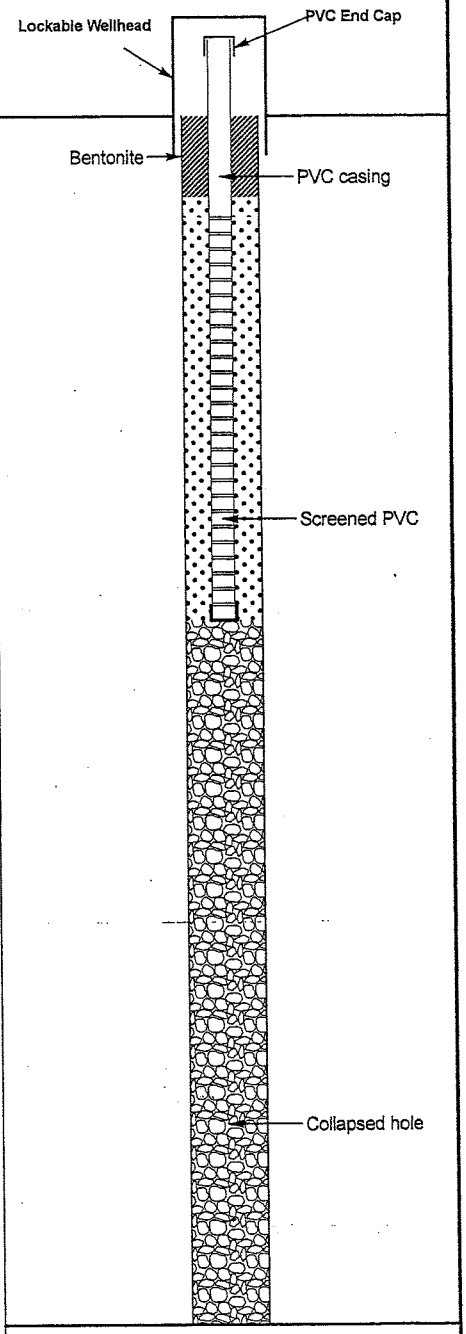
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 4.25 mAHD
Coordinates: 1186037.89 N
289707.35 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt: GRAVEL roadbase; blag	Asphalt	0	
	6	MW18_0.8-1.0		slag		1	
	5.7	MW18_1.8-2.0		Gravelly SAND: hard; medium grained; dry; black (roadbase/fill)	SW	2	D
	5.2	MW18_2.8-3.0				3	
	4.5	MW18_3.8-4.0				4	
	3.4	MW18_4.8-5.0				5	
	4.8	MW18_5.8-6.0				6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW19

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

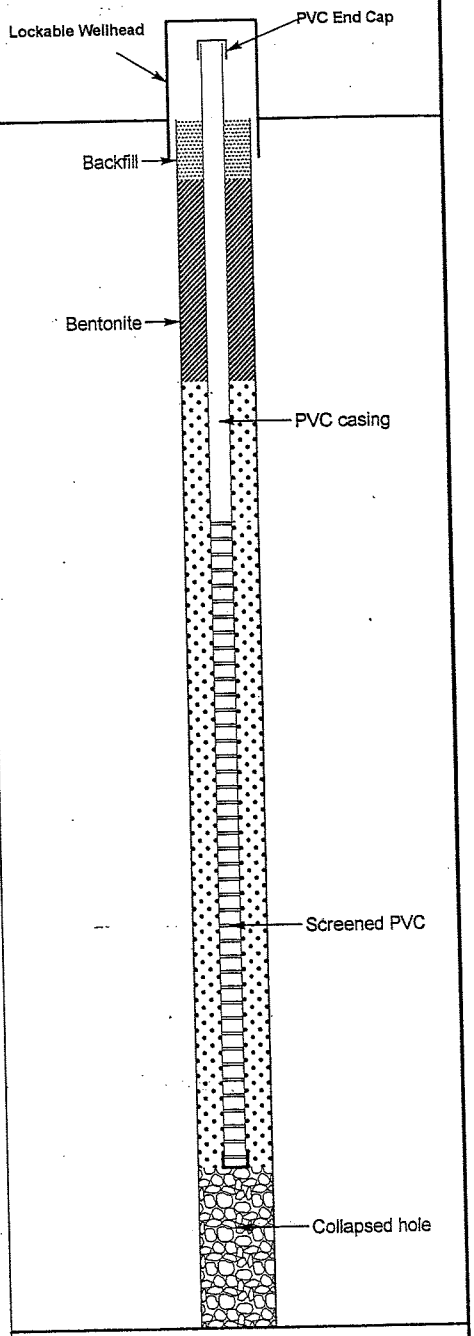
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 5.43 mAHD
Coordinates: 1186219.46 N
289508.14 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				FILL: Gravelly SAND with clay; black/grey; hard	Fill		
	5.6	MW19_0.8-1.0				1	
	5.9	MW19_1.8-2.0		SAND: brown; loose; medium grained	SC	2	
	6.9	MW19_2.8-3.0		Brown SAND with clay; moist; medium grained; loose	SC	3	M
	7.2	MW19_3.8-4.0				4	
	4.9	MW19_4.8-5.0		Silty CLAY: black; wet; plastic; soft	CL	5	W
	6.9	MW19_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296 LOGS.GPJ WCC_AUS.GDT 20/12/05

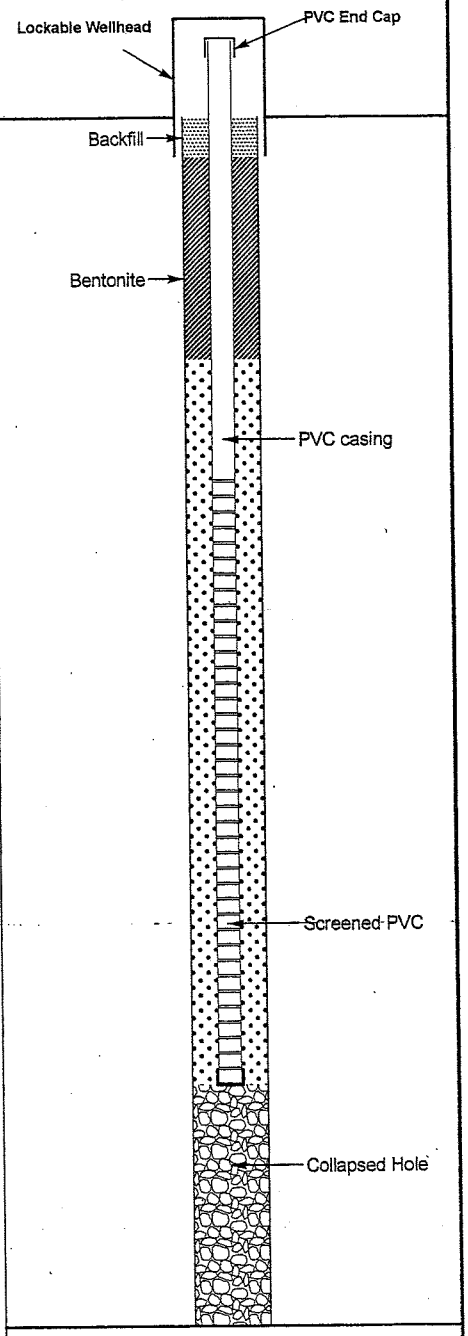
MONITORING WELL MW20

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2 Project No.: 43217296	Client: Port Kembla Port Corporation Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello Checked By: Date Started: 09-11-05 Date Finished: 09-11-05	Bore Size: 150 mm Total Depth: 6.00 m Casing Size: mm	Relative Level: 5.74 mAHD Coordinates: 1186521.46 N 289573.21 E Permit No:	Drill Type: Solid Stem Auger Drill Model: Eelson 3000 Drill Fluid: none

Sample Interval / PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
			Concrete	Concrete	0	
			FILL: black sand; large grained with gravel	FILL		
4.7	MW20_0.8-1.0				1	M
			Sandy CLAY: black; moist; mediums stiff	CL		
2.3	MW20_1.8-2.0				2	
4.5	MW20_2.8-3.0		SAND: brown; saturated; some clay; loose; medium grained	SW	3	W
NA	MW20_3.8-4.0				4	W
2.6	MW20_4.8-5.0		CLAY: with some sand; black; soft; plastic	CL	5	
NA	MW20_5.8-6.0				6	
			End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

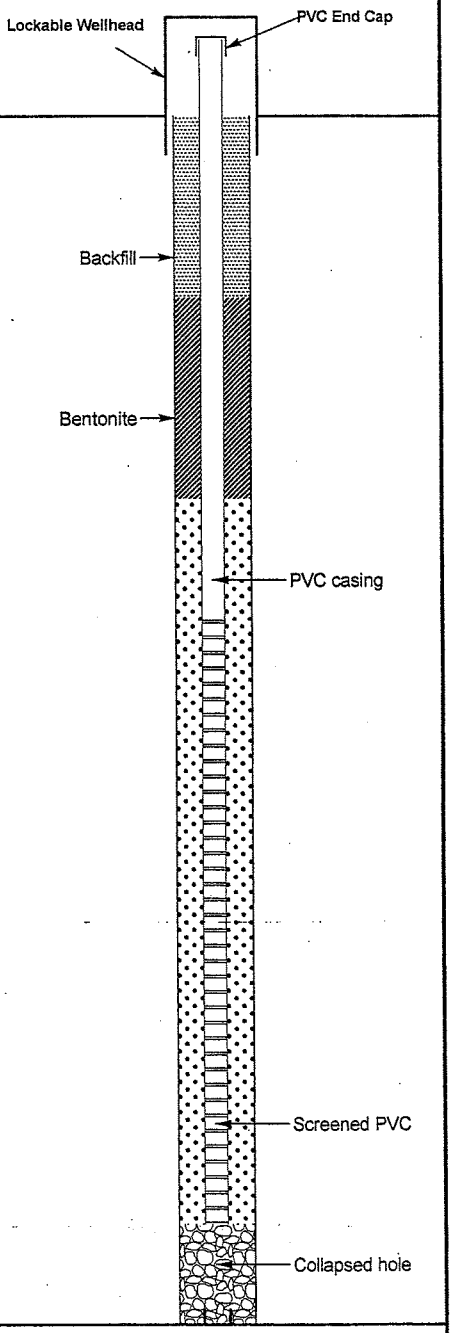
MONITORING WELL MW21

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2 Project No.: 43217296	Client: Port Kembla Port Corporation Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello Checked By: Date Started: 09-11-05 Date Finished: 09-11-05	Bore Size: 150 mm Total Depth: 6.00 m Casing Size: mm	Relative Level: 5.57 mAHD Coordinates: 1186331.20 N 289786.73 E Permit No:	Drill Type: Solid Stem Auger Drill Model: Eelson 3000 Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				FILL: Gravelly SAND; black; large grained; medium hard; dry	Fill		D
	3.9	MW21_0.8-1.0				1	
				Sandy CLAY: black/brown; medium stiff; moist; non-plastic	CL		M
	4.8	MW21_1.8-2.0				2	
	5.4	MW21_2.8-3.0				3	
				Concrete/hard layer	Concrete		
	5.9	MW21_3.8-4.0		SAND: medium grained; moist; loose	SW	4	M
	3.3	MW21_4.8-5.0				5	
				SAND: medium grained; wet; some clay	SW		W
	2.2	MW21_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



MONITORING WELL MW22

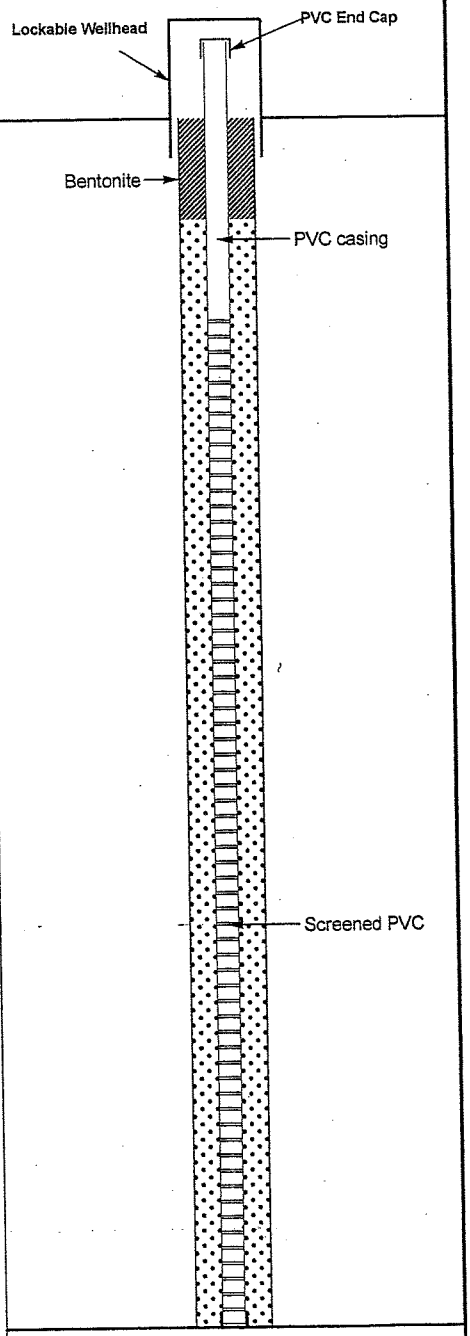
URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd	Project Reference: PKPC Inner Harbour PP2	Client: Port Kembla Port Corporation	
	Project No.: 43217296	Location: Tom Thumb Rd., Port Kembla	
Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 4.44 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 6.00 m	Coordinates: 1186355.15 N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	290339.89 E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				CONCRETE: gravel cemented (2-3 cm diameter pieces)	Concrete		
				SAND: dark brown; medium grain; loose	SW	1	
	1.2	MW22_1.4-1.5					
	0.9	MW22_1.8-2.0		Organic SAND: black; medium grained	SW	2	
				SAND: brown; medium grained; loose	SW		
	1.4	MW22_2.8-3.0				3	
	1.9	MW22_3.8-4.0		organic odour (sulfur)		4	
	0	MW22_4.8-5.0				5	
	0	MW22_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

SOIL BOREHOLE SB1

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E

Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: black; slag, gravel					
						CL	Sandy CLAY: medium stiff; moist; black; some gravel	M	St		0	SB1_0.8-1.0
				1								
						CL	Silty CLAY: dark brown; stiff; some shells		St		8.1	SB1_1.8-2.0
				2								
						CL	CLAY: dark brown; some silt; soft; moist; plastic	M	S		0.9	SB1_2.8-3.0
				3								
											9.3	SB1_3.8-4.0
				4			End of Hole					

ENVR_MELB J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

SOIL BOREHOLE SB2

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: slag, gravel					
						SW	SAND: grey; some clay; saturated; loose; some shell pieces; fine to medium grained	W	L			
											0.4	SB2_0.8-1.0
				1								
											0.6	SB2_1.8-2.0
				2								
											0	SB2_2.8-3.0
				3								
						CL	Sandy CLAY: grey; wet; stiff	W	St		0	SB2_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB3

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 07-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 07-11-05		Permit No:	

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
			▽	0			FILL: slag; black gravel					
				1							0	SB3_0.8-1.0
						CL	Silty CLAY: with some gravel; grey; wet; plastic; soft	W	S			
				2							0	SB3_1.8-2.0
				3							0	SB3_2.8-3.0
				4							0	SB3_3.8-4.0
							End of Hole					

ENVR_MELB J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

SOIL BOREHOLE SB4

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: gravel/slag; grey and black; dry	D				
						CL	Silty CLAY: some gravel; stiff; plastic; moist; some shells	M	St		1.3	SB4_0.8-1.0
				1								
				2							0.9	SB4_1.8-2.0
						CL	Sandy CLAY: black; soft; moist; organic matter; moderately plastic	M	S		1.1	SB4_2.8-3.0
				3								
											0.8	SB4_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB5

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: slag; grey/black gravel					
						GC	GRAVEL/CLAY mix: grey; wet; soft; no plasticity	W	S			
			▽	1						0		SB5_0.8-1.0
				2								
				3		CL	Sandy CLAY: dark grey; wet; medium stiffness	W	St	0.3		SB5_2.8-3.0
						SC	Clayey SAND: medium grain; dark brown; some shells; loose		L	0.7		SB5_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB6

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
0		Fill	FILL: slag, gravel; grey/black					
		CL	Sandy CLAY: medium stiff; wet; dark brown; some gravel	W	St		0.6	SB6_0.8-1.0
1								
		CL	Silty CLAY: dark brown; stiff; moist (wet from surface water)	M/W	St		0	SB6_1.8-2.0
2								
		SC	Clayey SAND: black; organic material (looks like top soil); non plastic; moist (not wet); compact	M			0.1	SB6_2.8-3.0
3			Black soil washed off auger by water entrance hole - no recovery					
4			End of Hole					

Method: Casing: Penetration (S M H R): Ground Water Data and Comments

URS

SOIL BOREHOLE SB7

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0			FILL: slag, gravel					
				1		CL	Sandy CLAY: dark brown; moist; medium stiffness; medium plasticity	M	St		2.1	SB7_0.8-1.0
				2		SC	SAND: brown; with some clay; loose; medium grained; moist	M	L		0.6	SB7_1.8-2.0
				3							0.9	SB7_2.8-3.0
				4			End of Hole				1.9	SB7_3.8-4.0

URS

SOIL BOREHOLE SB8

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						Fill	FILL: Gravelly SAND					
						CL	Silty CLAY: black; moist; medium stiffness; plastic	M	St		0	SB8_0.8-1.0
				1		SC	SAND: medium grained; loose; some clay; wet; grey	W	L			
											0	SB8_1.8-2.0
				2								
											0	SB8_2.8-3.0
				3								
											3.7	SB8_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB9

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						CL	Sandy CLAY: grey; wet; plastic; some gravel	W			4.3	SB9_0.8-1.0
				1								
			▽	2			increased gravel; very wet	W			NA	SB9_1.8-2.0
				3								SB9_2.8-3.0
				4			End of Hole					

URS

SOIL BOREHOLE SB10

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: Gravel					
											4.9	SB10_0.8-1.0
				1		SC	Clayey SAND: brown; dry; medium grained	D				
											7.4	SB10_1.8-2.0
				2		SW	SAND: brown; loose; medium grained; some clay		L			
											6.5	SB10_2.8-3.0
				3				M				
											3.5	SB10_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB11

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						CL	Sandy CLAY: black; loose		L		1	SB11_0.3-0.5
						SW	Clayey SAND: brown; moist; medium grained; loose	M	L		0.9	SB6_0.8-1.0
				1								
			▽			SW	SAND: light brown; medium grained; loose		L		1	SB6_1.8-2.0
				2								
						SW	Beach sand				0.6	SB6_2.8-3.0
				3								
											0.6	SB6_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB12

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations)	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt Concrete	Asphalt Concrete					
						SW	Beach SAND: light brown; medium grained; dry	D	L		2.5	SB12_0.8-1.0
				1								
			▽			SW	SAND: saturated; black; medium grained; some shells	W	L		1.4	SB12_1.8-2.0
				2								
											1.3	SB12_2.8-3.0
				3			more shells					
											2	SB12_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB13

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt: gravel/sand mix; dry	D				
				1		SW	SAND: dark brown; some gravel; dry; medium grained	D			2.4	SB13_0.8-1.0
				2		CL	Silty CLAY: dark brown/black; some sand; moist; plastic	M			2.3	SB13_1.8-2.0
			▽	3		SW	Beach SAND	W	L		2.1	SB13_2.8-3.0
						SW	saturated SAND; grey; medium grained	W	L		2.5	SB13_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB14

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

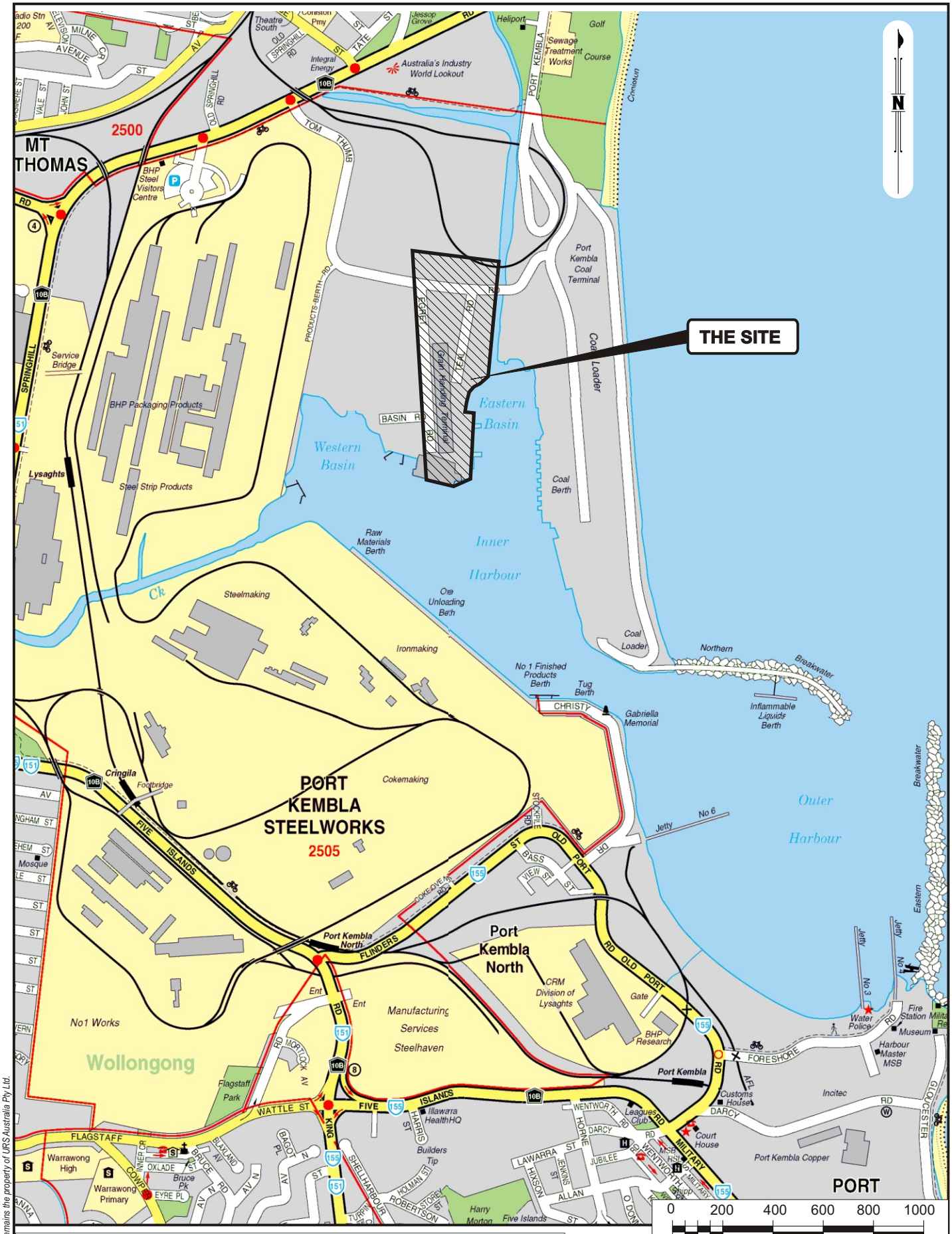
Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
				1		GP	GRAVEL: grey; large grain size; sand mixed in		L		2.4	SB14_0.8-1.0
				2			End of Hole: Refusal; concrete encountered					
				3								
				4								

Figures



Client: MAUNSELL/NATIONAL BIODIESEL	Project: NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, NSW	Title: **SITE LOCATION**
URS	Drawn: SP; Approved: EH; Date: 16/09/2008; Job No.: **43217865**; File No. 43217865.001.cdr	Figure: **1**; Rev. A; A4

NORTH

SOUTH PACIFIC OCEAN

COAL LOADER

COAL BERTH

EASTERN BASIN

INNER HARBOUR

GRAIN BERTH

WESTERN BASIN

WESTERN DRAIN

WESTERN DRAIN

EXISTING RAIL LOOP

RAIL SPUR

FARRER ROAD

SPRINGHILL ROAD

TOM THUMB ROAD

6

5

3

1

SB1 SB2 SB3 SB4 SB5 SB6 SB7 SB8 SB9 SB10 SB11 SB12 SB13 SB14

MW11 MW12 MW13 MW14 MW15 MW16 MW17 MW18 (Dry) MW19 MW20 MW21 MW22

IHMW1 IHMW2 IHMW3 IHMW4 IHMW5 IHMW6 IHMW7 IHMW8 IHMW9 IHMW10

A A'

B B'

DESIGNED:	EH
DRAWN:	BB
DATE:	16/09/08
PROJECT:	43217865
CAD FILE:	002.DWG
REVISION:	A

0 100 200 300 400 500

1:10000 (metres)

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- A CROSS SECTION LOCATION

CLIENT

MAUNSELL / AECOM

PROJECT

NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE

SITE LAYOUT PLAN

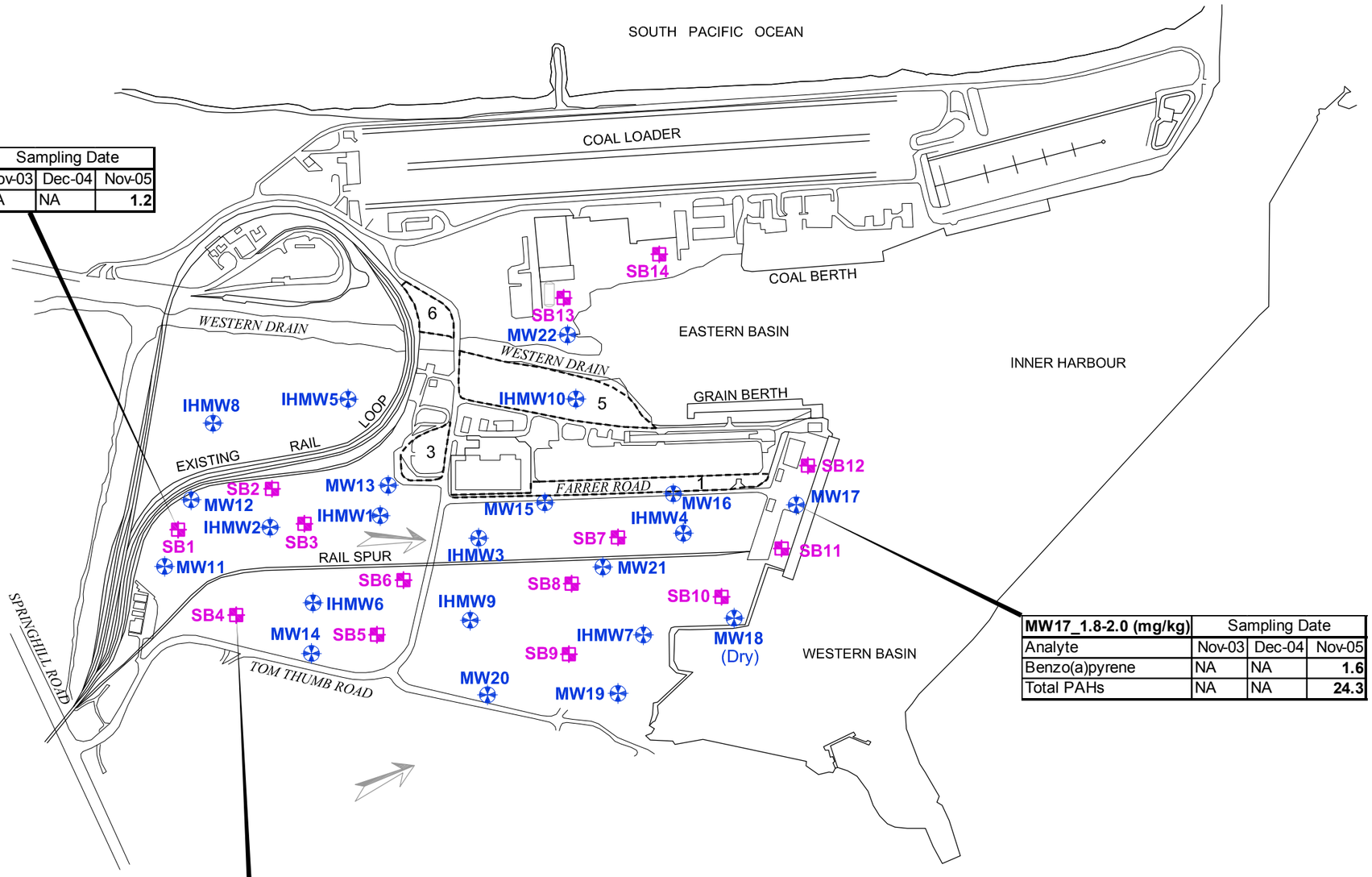
A3

URS

FIGURE **2**

NORTH

SB1_2.8-3.0 (mg/kg)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Benzo(a)pyrene	NA	NA	**1.2**



MW17_1.8-2.0 (mg/kg)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Benzo(a)pyrene	NA	NA	**1.6**
Total PAHs	NA	NA	**24.3**

SB4_1.8-2.0 (mg/kg)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Benzo(a)pyrene	NA	NA	**1.4**

DESIGNED:	EH
DRAWN:	BB
DATE:	16/09/08
PROJECT:	43217865
CAD FILE:	003.DWG
REVISION:	A

0 100 200 300 400 500

1:10000 (metres)

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 — ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- 24.3 — BOLD EXCEEDS NSW EPA 1994 SERVICE STATION GUIDELINE - SOIL
- NA — NOT ANALYSED

CLIENT

MAUNSELL / AECOM

PROJECT

NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

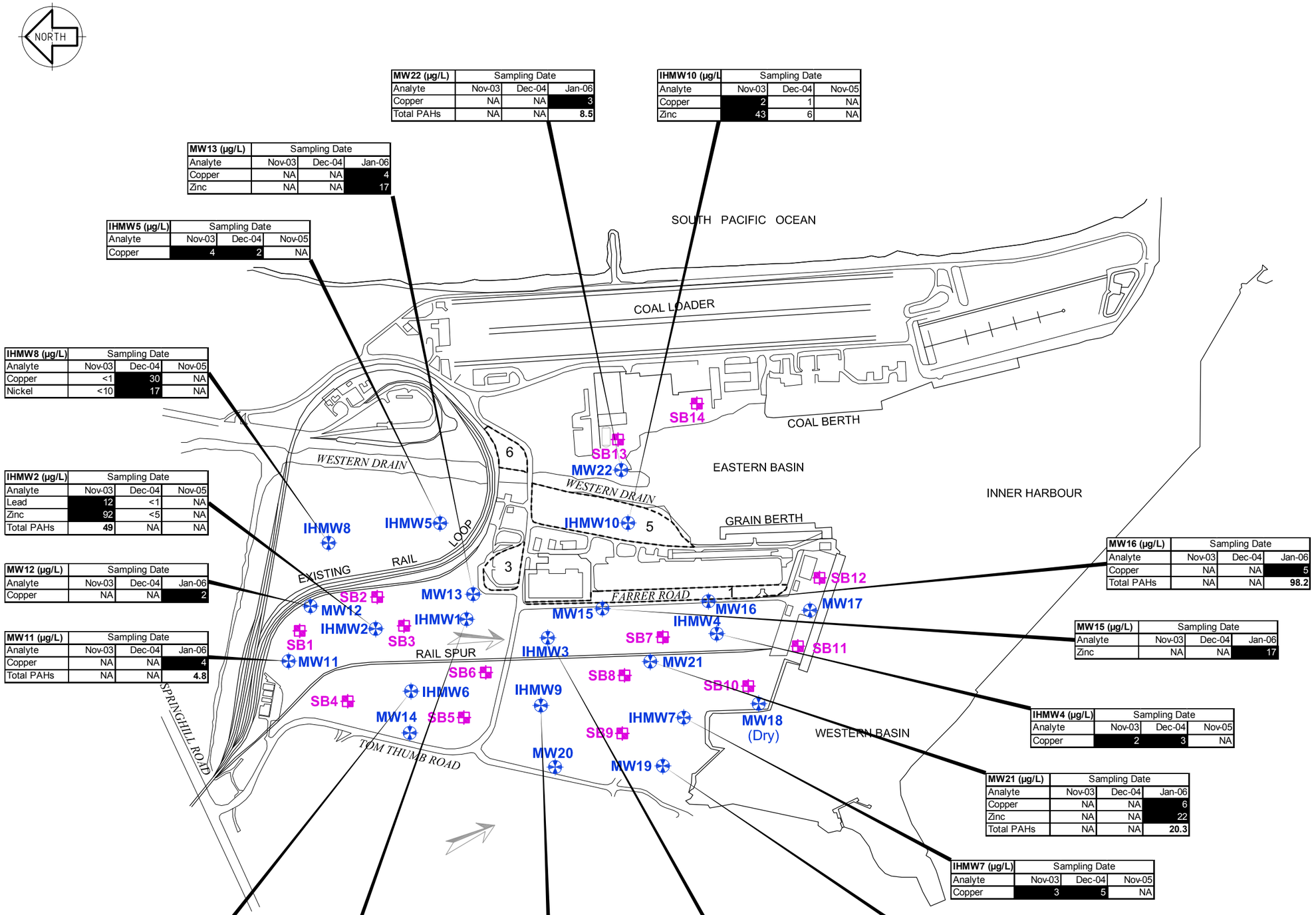
TITLE

HISTORICAL SOIL ANALYTICAL RESULTS - EXCEEDENCES

A3

URS

FIGURE 3



MW22 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	3
Total PAHs	NA	NA	**8.5**

IHMW10 (µg/L	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	1	NA
Zinc	43	6	NA

MW13 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	4
Zinc	NA	NA	17

IHMW5 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	4	2	NA

IHMW8 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	<1	30	NA
Nickel	<10	17	NA

IHMW2 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Lead	12	<1	NA
Zinc	92	<5	NA
Total PAHs	**49**	NA	NA

MW12 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	2

MW11 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	4
Total PAHs	NA	NA	**4.8**

MW16 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	5
Total PAHs	NA	NA	**98.2**

MW15 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Zinc	NA	NA	17

IHMW4 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	3	NA

MW21 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	6
Zinc	NA	NA	22
Total PAHs	NA	NA	**20.3**

IHMW7 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	3	5	NA

IHMW6 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	30	<20	NA
Zinc	44	<50	NA

IHMW1 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Zinc	16	<5	NA

IHMW9 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	3	NA
Zinc	18	26	NA

IHMW3 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	3	NA
Zinc	20	47	NA

MW19 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Zinc	NA	NA	35

DESIGNED: EH
DRAWN: BB
DATE: 16/09/08
PROJECT: 43217865
CAD FILE: 004.DWG
REVISION: A

0 100 200 300 400 500
1:10000 (metres)

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 — ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- **24.3** — BOLD EXCEEDS NSW EPA 1994 SERVICE STATION GUIDELINE - MARINE
- 16 — EXCEEDS ANZECC 2000 MARINE - 95% SPECIES
- NA — NOT ANALYSED

CLIENT
MAUNSELL / AECOM

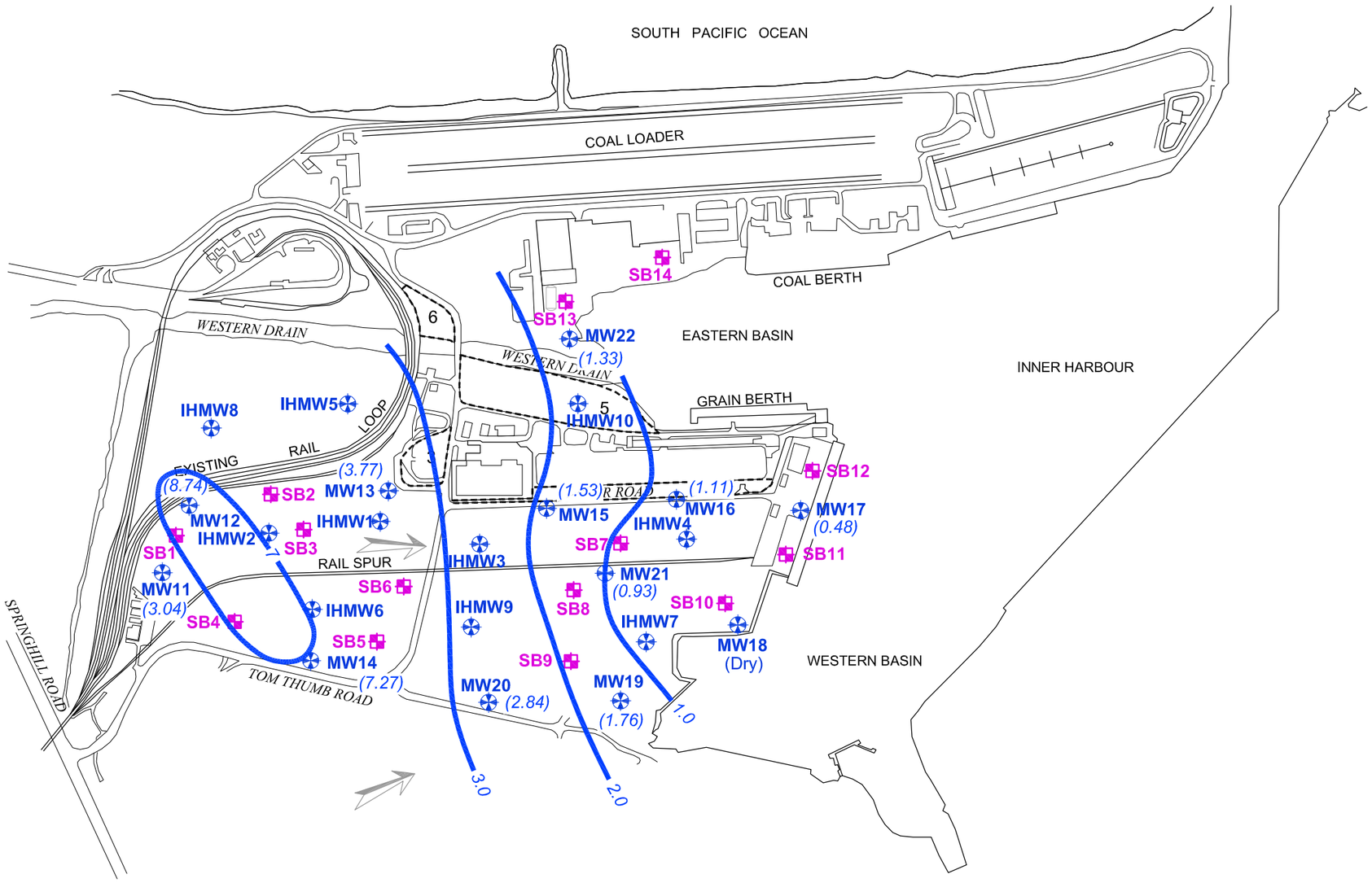
PROJECT
NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE
HISTORICAL GW ANALYTICAL RESULTS - EXCEEDENCES

A3

URS

FIGURE 4



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DRAWN:	BB
DATE:	16/09/08
PROJECT:	43217865
CAD FILE:	005.DWG
REVISION:	A

0 100 200 300 400 500

1:10000 (metres)

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 — ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- 2.0 — INFERRED GROUNDWATER CONTOURS (mAHD)
- (1.76) — SWL GROUNDWATER ELEVATION (mAHD)

HYDROGEOLOGICAL INFORMATION:

HYDRAULIC CONDUCTIVITY: 5-10m/day
HYDRAULIC GRADIENT: 0.001-0.005
SEEPAGE VELOCITY: 12.17-73m/year

CLIENT
MAUNSELL / AECOM

PROJECT
NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE
HISTORICAL GROUNDWATER GRADIENT MAP

A3

URS

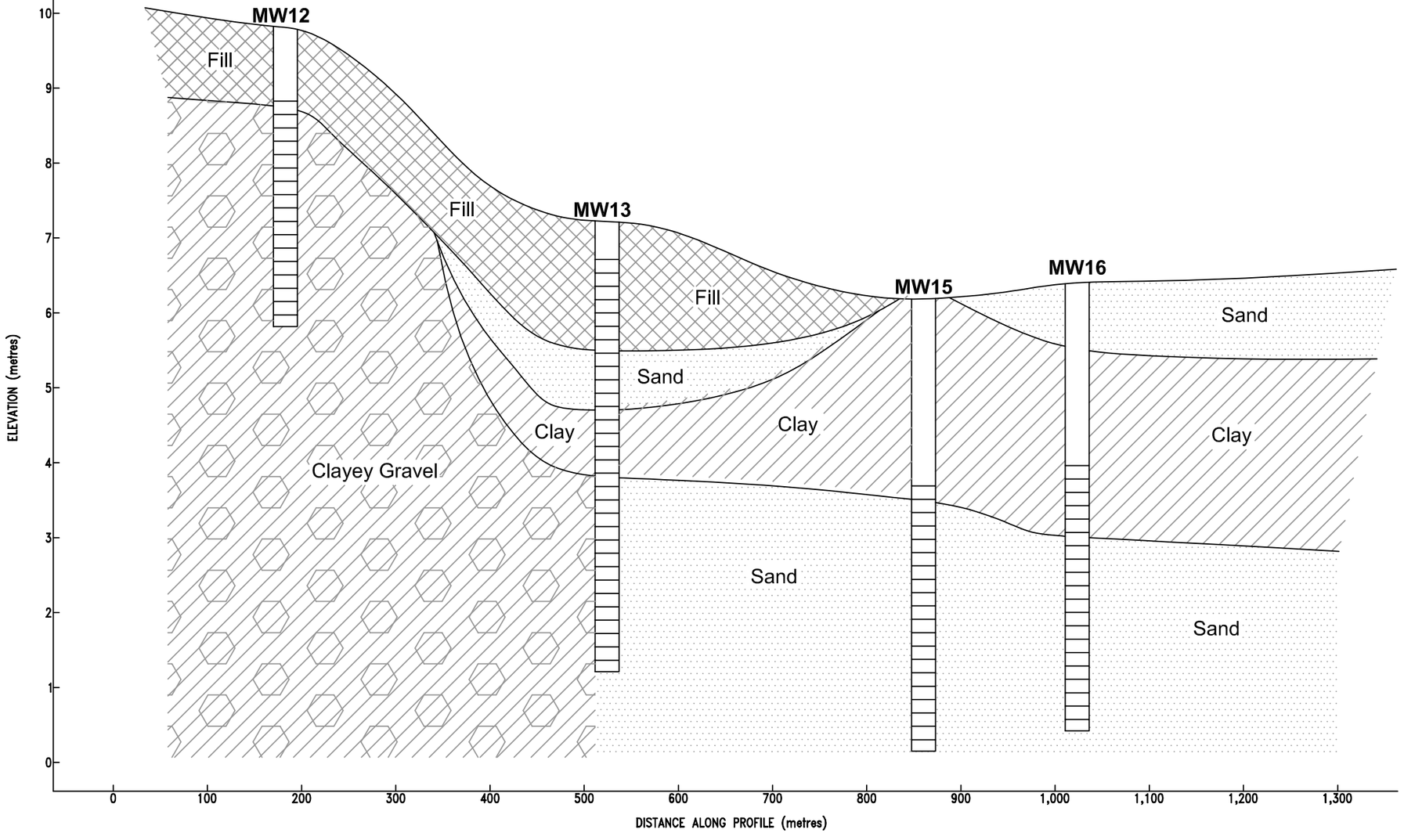
FIGURE 5

◄ North

A

South ►

A'



DESIGNED: EH
DRAWN: BB
DATE: 16/09/08
PROJECT: 43217865
CAD FILE: 006.DWG
REVISION: A

SCALE AS PER DISTANCE ALONG PROFILE

LEGEND

- FILL AND CONCRETE
- CLAY
- CLAYEY GRAVEL
- SAND

CLIENT
MAUNSELL / AECOM

PROJECT
NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE
GEOLOGICAL CROSS SECTION A-A'

A3

URS

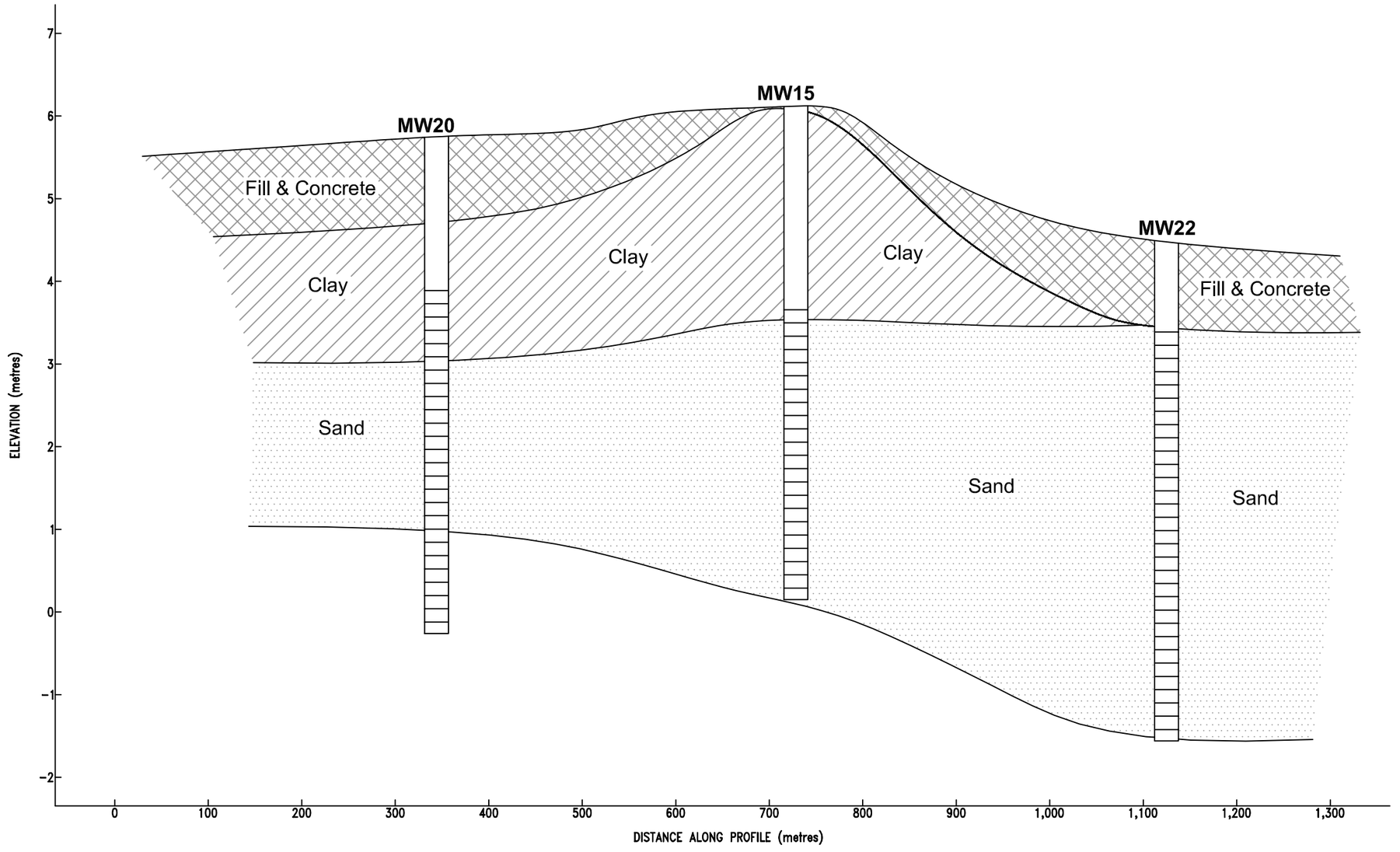
FIGURE
6

◄ West

B

East ►

B'



DESIGNED:	EH
DRAWN:	BB
DATE:	16/09/08
PROJECT:	43217865
CAD FILE:	007.DWG
REVISION:	A

SCALE AS PER DISTANCE ALONG PROFILE

LEGEND

- FILL AND CONCRETE
- CLAY
- SAND

CLIENT

MAUNSELL / AECOM

PROJECT

NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE

GEOLOGICAL CROSS SECTION B-B'

A3

URS

FIGURE

7

FINAL REPORT

National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW

Prepared for

National Biodiesel

16-33 Ryde Road
Pymble NSW 2073

25 June 2012

43177835

URS

Project Managers:

.....
Mauricio Bressan
Environmental Engineer

URS Australia Pty Ltd
407 Pacific Hwy
Artarmon NSW 2064
Tel: 61 2 8925 5500
Fax: 61 2 8925 5555

Project Director:

.....
Alex Horn
Senior Principal Engineer

Authors:

.....
Chris Carr

Environmental Scientist

Date: 25 June 2012
Reference: Type 43217865
Status: Type Final

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Executive Summary

URS Australia Pty Ltd (URS) was engaged by National Biodiesel Pty Ltd (NB) to assess the potential for contamination of soil and groundwater at NB's proposed soybean processing and biodiesel production facility site within the Port Kembla Inner Harbour area. This report details the results of URS' assessment and is provided in support of an Environmental Assessment being prepared by NB for the proposed facility following an initial assessment for Maunsell dated 25 September 2008.

Project Purpose

The primary purpose of URS' assessment was to assess the soil and groundwater conditions present within the subject site, including:

- assess any soil or groundwater contamination, in accordance with the requirements of the Director General of the Department of Planning and Infrastructure (DP&I) and Office of Environment and Heritage/Environmental Protection Agency (OEH/EPA);
- consider whether or not there is potential for salinity and acid sulfate soil impacts; and
- make recommendations based on the above findings as to whether the land is suitable for the proposed development.

This report is predicated upon URS' opinion that sufficient investigation of the proposed site(s) and the surrounding area has already been completed to form an opinion that, with adoption of suitable management protocols, the site is suitable for the proposed (industrial) land use.

Scope of Work and Methodology

The scope of work for this contamination assessment comprised the following:

- A site walkover;
- Review of historical reports and data; and
- Reporting of the investigation results.

Site Layout

The site comprises four non-adjoining allotments of land totalling approximately 7.61 ha in area. The allotments are adjacent to Grain Corp's Port Kembla grain terminal at Farrer Road, Port Kembla. (Refer Figure 2 Site Layout)

Land Plot Area – with replaced Land plot included

No.	PT LOT	D.P.	PKPC Approximate Areas (Ha)
1	2001	1030233	2.27
3 (New)	2	1125445	1.8
5	123	1128379	3.11
6	101	1120801	0.43
Total			**7.61**

Executive Summary

Geological and Hydrogeological Summary

The Wollongong Geological Series Sheet 9029-9120, 1:100,000 (Department of Mineral Resources and Energy, 1985) indicates that the site is underlain by Quaternary alluvium including estuarine muds, sand and silt.

Soil investigation works completed by URS in November 2005 indicated that the geology under the site consisted of fill material, clay, silty clay and sand. The fill material is comprised of slag and gravel, with some, concrete and sand.

The most recent work conducted by URS in November 2005 indicated that groundwater was encountered at varying elevations across the site, ranging from 0.480 to 8.740 m Australian Height Datum (AHD) within the sand layer. The hydraulic gradient ranged between 0.001 and 0.005. The variation in groundwater levels was reported to be most likely due to the varying porosity of the fill material and the fact that the site is reclaimed land. The groundwater elevations indicate that the groundwater flow is generally towards the east.

Analytical Results Summary

The generally homogenous nature of the fill that caps the Inner Harbour area has been recorded via soil boreholes and installation of monitoring wells, and is visually depicted in geological cross sections (URS, 2004 & URS, 2006). Except for the boundary of allotment 1 (grassed verge area) the site is indicated to contain fill material under allotments 1 and 5.

Soil samples collected from within and in the vicinity of the site by URS in 2005 were analysed for metals/metalloids, volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), benzene/toluene/ethyl benzene/xylenes (BTEX), phenolic compounds, polycyclic aromatic hydrocarbons (PAHs), phthalate esters, organochlorine pesticides, organophosphorous pesticides and polychlorinated biphenyl compounds (PCBs). The reported concentrations of metals were all below applicable guidelines for industrial land use (National Environment Protection (Assessment of Site Contamination) Measure 1999 Investigation Levels - ILs). VOCs were not detected. TPH, BTEX, phenols, phthalate esters, pesticides and PCB were all either not detected, or were detected below guideline concentrations.

Some PAH compounds were detected at concentrations above the ILs. Benzo(a)pyrene exceeded the ILs in 3 samples in MW17 (1.6 mg/kg) to the south of allotment 1, SB1 and SB4 (1.2 and 1.4 mg/kg) to the very northwest of allotment 3. Total PAHs were also exceeded in sample MW17 (24.3 µg/L). No elevated levels of any of the analytes tested were found in the boreholes located on allotment 5 and around allotments 1, 3 and 6.

Groundwater samples collected from the vicinity of the site by URS in 2005 were analysed for metal/metalloids, TPH, BTEX, phenolic compounds and PAHs. The results were compared against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand – ANZECC/ARMCANZ, referred to as ANZECC 2000). The groundwater analytical data show similar concentrations of copper (0.002-0.03 µg/L) and zinc (0.016-0.092 µg/L) slightly exceeding ANZECC 2000 guidelines in nearly every groundwater monitoring well in the vicinity of the site, with the exception of MW14, MW17 and MW20. Concentrations of lead (IHMW2; 0.012 µg/L) and nickel (IHMW8; 0.017 µg/L) slightly exceeding ANZECC 2000 guidelines were also detected.

Arsenic was also detected in many of the wells (IHMW4, IHMW5, IHMW9, MW13, MW14, MW15, MW16, MW20, MW21 and MW22; 0.001-0.006 µg/L) across the area, however no guideline exists for arsenic in marine aquatic ecosystems.

Executive Summary

TPH was detected in MW11, MW16 and MW21 (<600 µg/L) however no guideline exists for TPH in marine aquatic ecosystems.

No BTEX or phenols were detected in any of the wells (MW11 to MW22; no data for IHMW1 to IHMW10).

Elevated concentrations above ILs of PAHs were detected in IHMW2 (49 µg/L), MW11 (4.8 µg/L), MW16 (98.2 µg/L), MW21 (20.3 µg/L) and MW22 (8.5 µg/L). Wells IHMW2 and MW11 are located to the very northwest of allotment 3. Well MW16 and MW21 are located adjacent and west of allotment 1. Well MW22 is located on the eastern side of the Western Drain.

At the time of this investigation, no assessment of salinity and acid sulfate soil impacts is known to have been undertaken in the Inner Harbour area. According to the Acid Sulfate Soil Risk Map, Wollongong (9029S2, Department of Land and Water Conservation, Edition 2), the allotments of interest lie within the 'disturbed terrain' class. These include filled areas, as a result of reclamation for development. While there is a low risk of ASS where the volume of material to be disturbed is minimal, soil sampling and analysis would be required to further establish the presence of ASS.

The groundwater in the vicinity of the site varies from brackish to moderately saline. No documentation relating to potential salinity impacts on soil in the Inner Harbour has been sighted by URS. URS did not sight visual evidence of salinity impacts upon soil (salt crusts or scalding on the surface), however a more conclusive assessment of the salinity conditions of the soil cannot be made without analyses of the soil salinity. Soil sampling and analysis would be required to further establish the risk of salinity.

Conclusions

On the basis of the results of this assessment and the previous investigations conducted at the site, URS concludes the following:

- The results of soil investigations in 2005 did not detect soil contamination with respect to the following analytes: metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs were detected in soils in the vicinity of the site. Some slightly elevated concentrations of PAH compounds were detected in soil to the very northwest of allotment 3, and to the distant south of allotment 1, however no PAH compounds were detected in soil in close proximity to the allotments of interest.
- No data was available to provide an assessment of the risk of acid sulfate soil or soil salinity at the site. Given the proximity of the site to marine waters, it is considered that there is potential for there to be acid sulfate soil and saline soil at the site.
- The results of groundwater investigations in 2005 indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the NB site.
- Total PAHs exceeded nominated ILs in groundwater samples collected from five monitoring wells. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to (western side) allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

- Based on these findings, the allotments of interest are not considered to be contaminated and are considered suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the allotments of interest have lead to contamination of the surrounding water bodies.

Recommendations

On the basis of the results of this and previous investigations conducted at the site, URS recommends the following:

- Prior to the commencement of site work and in areas were soil disturbance is likely, soil sampling and analysis is required to further establish the presence of ASS and saline soil. Should testing reveal that either ASS or saline soil is present, then an Acid Sulfate Management Plan and/or a Salinity Management Plan shall be prepared prior to the commencement of site work, and the management measures detailed in that Plan shall be implemented.

Introduction | Section 1

1.1 General

URS Australia Pty Ltd (URS) was commissioned by National Biodiesel Pty Ltd (NB) to assess the potential for contamination of soil and groundwater at NB's proposed soybean processing and biodiesel production facility site located within the Port Kembla Inner Harbour area. This report details the results of URS' assessment and is provided in support of an Environmental Assessment being prepared by NB for the proposed facility.

1.2 Project Purpose

- The primary purpose of this assessment is to assess the soil and groundwater conditions present within the new subject site No.3 PT LOT (NEW) - D.P.1125445, and to update the 25 September 2008 URS Contamination Assessment report to include the new allotment. These works will include:
- Assessment of any soil or groundwater contamination, in accordance with the requirements of the Director General of the NSW Department of Planning & Infrastructure;
- Considerations to whether or not there is potential for salinity and acid sulphate soil impacts; and
- Recommendations based on the above findings as to whether the land is suitable for the proposed development.

This report is predicated upon URS' opinion that sufficient investigation of the proposed site(s) and the surrounding area has already been completed to form an opinion that, with adoption of suitable management protocols, the site is suitable for the proposed (industrial) land use.

2.1 Site Identification and Description

2.1.1 General

The investigation area is within the Inner Harbour of Port Kembla, located in the Wollongong Local Government Area, 3 km south of Wollongong **(Figure 1)**. The proposed facility's site is bounded by Tom Thumb Road to its north, Farrer Road to its west, Berth 103 and 104 to its south, Western Drain and Port Kembla Coal Terminal to its east. The Soybean Processing and Biodiesel Production Facility is to be located on four separate allotments (1, 3, 5 & 6) adjoining and surrounding the existing Grain Terminal (operated by GrainCorp), within an existing heavy industrial precinct, and has a collective area of approximately 7.6 ha **(Figure 2)**.

2.1.2 Site Infrastructure

The allotments of interest are currently vacant and contain no significant infrastructure or vegetation (**Plates 1 to 6**). Details of the project and the proposed uses of the allotments are provided in Maunsell 2008 (PEA). URS understands that the infrastructure for the proposed facility will generally be at or above ground level, however, there will be some minor excavations for the footings of this infrastructure and associated services.

Lot 3, DP1125445, to the east of the primary Garrangatty Waterway sites, has however replaced the former Lot 20, DP 1046295 as shown in the Site Layout .

2.2 Surrounding Land Use

The allotments are surrounded by heavy industry. To the south lies BlueScope Steel operations, to the north the Sydney Water Sewerage Treatment Works, the Port Kembla Coal Terminal is to the east, and BHP packaging and steel products are to the west. The allotments surround GrainCorp operations, including the Grain Terminal, and between allotments 5 and 1 lies a fertilizer storage shed (leased by Incitec Pivot from GrainCorp). The eastern and southern portions of allotment 5 and the south of allotment 1 are bounded by the western drain and the Inner Harbour.

2.3 Site History

The Port Kembla area has a long industrial history. The Inner Harbour, located within this area, was originally part of the Tom Thumb Lagoon. It was filled with blast furnace slag and a casting basin provided for construction of sections of the Sydney Harbour Tunnel during the late 1980s and early 1990s (**Appendix B** contains aerial photographs from 1963 and 2008 illustrating this change). This area was subsequently filled in with blast furnace slag from BHP Steel operations. In the late 1990s Tom Thumb Road and the rail spur were added. Approximately 2 million tonnes of blast furnace slag was used to reclaim and level the area (URS, 2004). which is now present as a relatively homogenous layer across the site **(Figures 6 and 7).**

The Graincorp facility was constructed in 1989 and is dominated by concrete bulk grain silos.

The fertilizer shed on the GrainCorp site was built in 1996 and is sealed with a concrete floor. Deliveries are made into the shed by truck. A building that formerly contained pesticides was located to the southern side of allotment 5, which was decommissioned around 20 years ago. The pesticides Alfacron (azamethiphos) and Roundup (glyphosate) were used to clean out the inside of GrainCorp silos. Only dry packs and no liquids were used during its' operation. Reportedly no asbestos has been used on the area, and there are no oil reservoirs or

bulk oil storage areas. Minor quantities of petrol and diesel are used for GrainCorp operations. There have been no known major losses or spills of any drums, pesticides or fire water on the site.

2.4 Physical Setting

2.4.1 Local Topography and Hydrology

The allotments are generally flat and unsealed.

Allotment 1 lies adjacent to Farrer Road, west of the Grain Terminal and south of Tom Thumb Road. It is best described as a grass verge which is bounded by a cyclone wire fence on its western side **(Plate 1).**

Allotment 3 is situated north of Tom Thumb Road and is not vegetated **(Plate 2).** This allotment has a gentle fall to the north west..

Allotment 5 is bounded by the Western Drain to the east, Morton Way and the Grain Terminal to the west, Tom Thumb Road to the north and the Eastern Basin/Inner Harbour to the south **(Plates 3, 4 and 5).** This allotment is relatively flat and is covered by a bitumen pavement with a narrow vegetative strip along the eastern boundary. On the southern end of the eastern boundary, a section of slag fill material has slumped towards the Western Drain, as a result of a broken subterranean pipeline (Maunsell 2008; **Plate 4**).

Allotment 6 is bounded by the rail line to the north, Tom Thumb Road to the south and east and by the Western Drain to the west **(Plate 6).** The allotment contains no significant vegetation and is relatively flat. Allotment 5 and 6 temporarily contain a number of large stock piles of dredged material (obtained from the outer harbour) and gravel, which are to be removed prior to development works. Allotment 6 also contains a stormwater pit which drains to the western drain **(Plate 6).**

2.4.2 Regional Geology

The Wollongong Geological Series Sheet 9029-9120, 1:100,000 (Department of Mineral Resources and Energy, 1985) indicates that the site is underlain by Quaternary alluvium including estuarine muds, sand and silt.

2.4.3 Site Geology

Soil investigation works completed by URS in November 2005 indicated that the geology under the site consisted of fill, clay, silty clay and sand. The generalised geological profile under the site is summarised in the following table.

Geological Profile

Depth (mBGL)	Soil Description
0.0 – 2.0	FILL: Slag, gravel, sand, rock fragments, mostly dry.
0.5 – 2.0	SILTY CLAY: Soft; moist; dark brown; some sand; medium plasticity.
2.0 - 5.5	SAND: Moist; plastic; medium grained; some shells, some clay.
3.4 – 4.4	GRAVEL: Black; some clay; wet.
4.5 – 6.0	SANDY CLAY: black; moist; soft; plastic, some gravel.

mBGL – metres below ground level

Cross sections illustrating the general geology during this work, drawn parallel and transverse to the groundwater flow direction, are presented in **Figures 6** and **7**, respectively.

A site inspection completed by URS on the new allotment three in June 2012 indicated the site had been regraded. Imported Fill had been used to cap the underlying geology. The Fill identified was a Sandy GRAVEL, grey brown, sub-rounded, sub-angular material (minor anthropogenic impact was noted in this Fill).

2.4.4 Regional Hydrogeology

The most recent work conducted by URS in November 2005 indicated that groundwater was encountered at varying elevations, ranging from 0.480 to 8.740 m Australian Height Datum (AHD) within the sand layer. The hydraulic gradient ranged between 0.001 and 0.005 **(Table 1).** The variation in groundwater levels was reported to be most likely due to the varying porosity of the fill material and the fact that the investigation area is reclaimed land. The groundwater elevations indicate that flow is generally towards the east **(Figure 5).**

The total dissolved solids (TDS) concentration in groundwater under the site ranged from 273 mg/L to 12,439 mg/L, which was inferred to be indicative of fresh to saline water **(Table 2).** The high TDS concentrations were concentrated in northern section of the Inner Harbour area, to the north west of allotment 3, and adjacent and south of allotment 1. These TDS concentrations would make the groundwater unsuitable for drinking water, however, may be beneficially abstracted for use in irrigation, livestock watering and for industrial use. There is no known current extraction of groundwater undertaken at the site.

2.5 Previous Investigations

2.5.1 General

To the knowledge of URS, the following investigations have been conducted at and around the site:

- Public Works Department (1984) *May 1984 Port Kembla Grain Terminal Preliminary Geotechnical Investigation for Conceptual Design Report.*
- URS Australia (2004) *Phase II Environmental Site Assessment Port Kembla Port Corporation - Inner and Outer Harbour Port Kembla NSW.*
- URS Australia (2005) *June 2005 Inner Harbour and Outer Harbour Groundwater and Surface Water Assessment Port Kembla Port Corporation - Port Kembla NSW*
- URS Australia (2006) *January 2005 Post Phase 2 Environmental Site Assessment Port Kembla Port Corporation, Inner Harbour Soil and Groundwater Assessment - Port Kembla NSW.*
- Maunsell AECOM (2008) *May 2008 Preliminary Environmental Assessment, Soybean Processing and Biodiesel Production Facility.*

3.1 Scope of Work and Methodology

3.1.1 General

The scope of work for this contamination assessment comprised the following:

- A site walkover and discussions with representatives of NB and GrainCorp;
- Review of historical reports and data; and
- Reporting of the investigation results.

4.1 Previous Findings

The soil and groundwater conditions of the Inner Harbour area have been extensively investigated. Approximately 14 soil bores (SB) and 22 monitoring wells (MW) are located around the Inner Harbour **(Figure 2)**. Wells IHMW1 to IHMW10 were installed in November 2003, soil bores SB1 to SB14 and wells MW11 to MW22 were installed in November 2005. Of these well IHMW10 is located within allotment 5, MW15 and MW16 lies at the western boundary of allotment 1, and MW13 lies at the northwest boundary of old allotment 3 (not included in the current Development Application). The remainder of the bores and MWs surround the allotments, mainly to the north, west and south, with two bores (SB13 and SB14) and one well (MW22) located directly to the east of the Western Drain. Boreholes drilled in 1983 (Public Works Department) are also located within this vicinity, however the exact location of these bores could not be established as the site plan was drawn by hand and no distinguishable features could be identified **(Appendix A)**.

Field Groundwater Quality Parameters

A summary of the field parameters and groundwater descriptions is presented in **Table 2**. The most recent results of these measurements are summarised below (URS, 2006);

- Electrical conductivity (EC) ranged from 390 µS/cm (MW22) to 17,770 µS/cm (MW11), which is indicative of fresh to saline groundwater;
- pH ranged from 7.13 (MW21) to 12.46 (MW12), which is indicative of neutral to alkaline groundwater;
- Redox potential (Eh) ranged from -2 mV (MW11) to 318 mV (MW12), which is indicative of oxidising conditions; and
- Dissolved oxygen (DO) was measured at between 2.62 mg/L (MW20) to 10.65 mg/L (MW13).

The high EC readings are concentrated in the eastern and northern parts of the Inner Harbour area (MW11, MW16 and MW20). High pH readings were recorded in monitoring wells MW11, MW12, MW13 and MW14, also located in the northern section of the Inner Harbour area. These readings are consistent to those measured in previous assessments of wells in this area **(Table 2).**

4.2 Investigation Levels

4.2.1 Soil

Analytical results for soil were evaluated against the following investigation levels:

NEPM HILs and EILs - PAHs, Metal / Metalloids, Pesticides and Phenol

The *National Environmental Protection (Assessment of Site Contamination) Measure 1999 Health Based Investigation Levels* (National Environmental Protection Council, 1999) (NEPM HILs) have been developed for a range of land use categories. For each land use type, appropriate generic exposure scenarios and relevant generic exposure factors have been considered in developing a range of investigation levels. URS considered the NEPM HIL Level F (commercial / industrial) an appropriate investigation level for the site based on its current zoning and use.

The NEPM HIL F guideline concentrations are presented in **Table 3**.

TPH and BTEX

The NEPM provides HILs for some aliphatic and aromatic fractions of TPH. However, since the analysis of these TPH fractions is not by the routine method, the *Guidelines for Assessing Service Station Sites* (NSW EPA, 1994) (Service Station Guidelines) are typically used as the investigation levels for C_6-C_9 and C_{10}-C_{36} TPH fractions. The Service Station Guidelines also provide guidelines for BTEX compounds. Since the Service Station Guidelines (soils) have been developed for "*sensitive land use*" (NSW EPA, 1994), they are considered to be very conservative investigation levels for the assessment of a site with an industrial setting. The Service Station Guidelines concentrations for TPH and BTEX are presented in **Table 2**.

4.2.2 Groundwater

The site investigation levels used to evaluate the groundwater analytical results were taken from the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000), National Water Quality Management Strategy, "*Australian and New Zealand Guidelines for Fresh and Marine Water Quality*" (ANZECC, 2000). The ANZECC (2000) guidelines provide Trigger Values for concentrations of organic and inorganic chemicals in freshwater and marine aquatic environments. Due to the location of the site and potential down-gradient receptors, the investigation levels for marine water aquatic ecosystems have been adopted for the site (95% level of protection).

Adopted investigation levels for groundwater are summarised in **Table 13**.

4.3 Historical Soil Results

The generally homogenous nature of the fill that caps the Inner Harbour area has been recorded via soil and MW installations, and is visually depicted in geological cross sections (URS, 2004 & URS, 2006). The most recent of these (URS, 2006) are shown in **Figures 6 and 7**. Cross section B spans allotments 5 and 1 from northwest to southeast, while cross section A spans the western side of allotment 1, from north to south. Except for the boundary of allotment 1 (grassed verge area) the area is indicated to contain fill under allotments 1 and 5 **(Figure 6)**. The northern end of allotment 1 is also indicated to contain fill, while the southern portion contains some natural material (sand and clay; **Figure 7)**. Historical bore logs from well and soil bore installations are shown in **Appendix C**.

Metal/metalloids, VOCs, TPH, BTEX, phenolic compounds, PAHs, phthalate esters, organochlorine pesticides, organophosphorous pesticides and PCBs have been analysed for soil samples collected from this area (URS, 2004 & 2006; **Figure 4)**.

- It was found that concentrations of metals were all detected below NEPM guidelines for industrial land use (ILs; **Table 4**).
- VOCs were not detected **(Table 5)**. TPH, BTEX, phenols, phthalate esters, pesticides and PCB concentrations were all either not detected, or were detected below guidelines **(Tables 6, 7, 9, 10 & 11)**.
- Some PAH compounds were detected slightly above guidelines. Benzo(a)pyrene exceeded ILs in 3 samples in MW17 (1.6 mg/kg; to the south of allotment 1), SB1 and SB4 (1.2 and 1.4 mg/kg) to the very northwest of allotment 3; **Figure 4**). Total PAHs were also exceeded in one sample (MW17; 24.3 µg/L).

- No elevated levels of any of the analytes tested were found in the boreholes located on allotment 5 and around allotments 1, 3 and 6.

4.4 Historical Groundwater Results

Metal/metalloids, TPH, BTEX, phenolic compounds and PAHs have been analysed in groundwater in the Inner Harbour (URS, 2006).

- The groundwater analytical data show similar concentrations of copper (0.002-0.03 µg/L) and zinc (0.016-0.092 µg/L) slightly exceeding ANZECC 2000 guidelines in most MWs in the vicinity of the site, with the exception of MW14, MW17 and MW20 **(Table 14; Figure 3)**. Concentrations of lead (IHMW2; 0.012 µg/L) and nickel (IHMW8; 0.017 µg/L) slightly exceeding ANZECC 2000 guidelines were also detected **(Figure 3)**. Arsenic was also detected above the LOR in many of the wells (IHMW4, IHMW5, IHMW9, MW13, MW14, MW15, MW16, MW20, MW21 and MW22; 0.001-0.006 µg/L) across the area, however, no guidelines exist for arsenic in marine aquatic systems.
- Low concentrations of TPH were detected in MW11, MW16 and MW21 (<600 µg/L; **Table 15)** however no guidelines exist for TPH in marine aquatic systems.
- No BTEX or phenols were detected in any of the wells (MW11 to MW22; no data for IHMW1 to IHMW10; **Tables 15 & 16)**.
- Elevated concentrations of PAHs were detected in IHMW2 (49 µg/L), MW11 (4.8 µg/L), MW16 (98.2 µg/L), MW21 (20.3 µg/L) and MW22 (8.5 µg/L; **Figure 3)**. Wells IHMW2 and MW11 are located to the very northwest of allotment 3. Well MW16 and MW21 are located adjacent and west of allotment 1. Well MW22 is located on the eastern side of the Western Drain.

5.1 Extent of Impacts

5.1.1 Soil

A number of soil investigations have been completed in the Inner Harbour area. The geology of the investigation area was found to be fill, comprising blast furnace slag, gravel and sand in the first 2 mBGL, with clay to 4 mBGL and sand up to 5.5 mBGL.

The soil analytical results show no elevated levels of metals, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs across the Inner Harbour area. Some slightly elevated PAH compounds were detected to the very northwest of allotment 3, and to the very south of allotment 1, however no PAH compounds were detected in any of the boreholes/wells located in close proximity to the allotments of interest.

5.1.2 Groundwater

The groundwater elevations from 2006 indicate that flow is generally towards the east, with a hydraulic gradient ranging between 0.001 and 0.005 and groundwater seepage velocity was calculated to be up to approximately 73 m/year.

The groundwater analytical results recorded concentrations slightly above the nominated ILs for copper and zinc across the area, with the exception of MW14, MW17 and MW20. One well recorded an elevated level of lead (IHMW2) and one an elevated concentration of nickel (IHMW8). Concentrations of arsenic (above LOR) were also detected in groundwater samples from all newly (2006) installed monitoring wells. There are no guidelines for arsenic in groundwater applicable to marine ecosystems in the receiving water bodies. The source of these slightly elevated concentrations is reported to result from historical metal contamination of the sediments underlying the inner harbour area, or possibly leaching of fill material (URS, 2006). Where two sets of data are available from the same wells (URS 2004 and 2005), concentrations had either decreased, or had remained the same from 2004 to 2005.

Concentrations of TPH C_{10}-C_{36} were detected in groundwater collected from MW11, MW16 and MW21, however no guidelines exist for TPH in marine aquatic systems.

Total PAHs exceeded nominated ILs in groundwater samples collected from monitoring wells IHMW2, MW11, MW16, MW21 and MW22. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

No BTEX or phenols were detected in groundwater collected from any monitoring wells.

The results from this investigation are consistent with industrial land reclaimed with blast furnace slag based fill material (URS, 2006). In addition, water quality in the Inner Harbour is also affected by urban and industrial runoff from surrounding areas (Maunsell, 2008).

There is no evidence to suggest that the allotments of interest have lead to contamination of the surrounding water bodies. Groundwater samples with metal/metalloid and PAH concentrations above the nominated ILs are moderate to low and are not considered to be significant nor specific to the NB site. Based on these findings, the allotments of interest are not significantly contaminated and, with respect to potential contamination issues, are considered to be suitable for the proposed development.

5.2 Consideration of Acid Sulfate Soil and Salinity Impacts

At the time of this investigation, no assessment of salinity and acid sulfate soil impacts is known to have been undertaken in the Inner Harbour area.

Acid Sulfate soils

Acid sulfate soils (ASS) contain naturally occurring iron monosulfides and disulfides which, when exposed to oxidising conditions, generate sulfuric acid. Exposure to oxidising conditions can occur where disturbance of soil (by excavation or lowering of the water table) is likely to occur. ASS are common in areas of low lying parts of coastal floodplains, rivers and creeks. This includes areas with saline or brackish water, such as coastal flats and tidal areas (ASSMAC 1998) such as the subject site. Sulfidic sediment may be found at any depth in suitable coastal sediments, however they are most usually found beneath the water table (Stone et al., 1998).

As an initial step in establishing weather or not ASS are present on a site, the Acid Sulfate Soils Planning Maps are consulted, and the probability assessed. According to the Acid Sulfate Soil Risk Map, Wollongong (9029S2, Department of Land and Water Conservation, Edition 2), the allotments of interest lie within the 'disturbed terrain' class. These include filled areas, as a result of reclamation for development. While there is a low risk of ASS where the volume of material to be disturbed is minimal, prior to the commencement of site work and in areas where soil disturbance is likely, soil sampling and analysis would be required to further establish the presence of ASS (Stone et al., 1998). Should testing reveal that ASS is present, then an Acid Sulfate Soil Management Plan shall be prepared prior to the commencement of site work and the management measures detailed in that Plan shall be implemented.

Salinity

Dryland salinity can occur on soil which contains high levels of salt. These salts are dispersed to the land surface when subject to a rising watertable. No documentation relating to potential salinity impacts in the Inner Harbour is known to exist and no visual evidence of salinity impacts on the soil has been observed. However, it is considered that there is potential for the soil at the site to be impacted by salinity, particular at depth. Soil sampling and analysis would be required to further assess the risk of salinity at the site.

Prior to the commencement of site works, soil sampling and analysis would be required to further establish the risk of salinity. Should testing reveal that there is a risk of salinity, then a Salinity Management Plan shall be prepared prior to the commencement of site works and the management measures detailed in that Plan shall be implemented.

5.3 Fate and Transport

5.3.1 Potential Sources

Potential primary sources of the contaminant impacts identified at the site comprise the following:

- The most likely source of the elevated concentrations of metals/metalloids in the groundwater in the vicinity of the site is leaching from the imported fill, comprising mostly of blast furnace slag, that has been used to reclaim and level the investigation area; and
- The most likely source of the TPH / PAH contamination is spills and leaks associated with the previous activities conducted on the sites, including the loading, unloading and operation of rail lines.

5.3.2 Pathways and Transport

Potential pathways for the migration of the identified site impacts may include:

- Leaching of metals/metalloids, petroleum hydrocarbons and PAH from soil into groundwater within the shallow sand aquifer.

5.3.3 Potential Receptors

Potential receptors of the identified elevated concentrations of metals/metalloids, petroleum hydrocarbons and PAH include the following:

- Workers conducting excavations at and around the site may be exposed to impacted groundwater and soil;
- Due to the high salinity, the groundwater is not suitable for abstraction for drinking water, but may be suitable for livestock watering (considered unlikely, given the setting), irrigation and industrial purposes; and
- Surface water environments located down gradient of the site (Tom Thumb Lagoon, Port Kembla Harbour and ultimately the Pacific Ocean) receive water discharges from the site.

5.3.4 Fate and Transport Summary

If excavations are of sufficient depth to intercept impacted groundwater or soil, human contact is likely to be incidental and related to short term exposure and appropriate personal protective equipment and hygiene procedures would be sufficient to mitigate any potential risks. There is no evidence to suggest the investigation area has lead to contamination of the surrounding water bodies. Surface water sampling, if conducted, would more fully determine this.

With respect to groundwater given there is unlikely to be any abstraction on the site, the migration of groundwater through the shallow sand aquifer beneath the investigation area is the most likely pathway for potential receptor impact. The observed concentrations are generally moderate to low. Currently there is no indication that significant impacts are occurring or are likely to occur.

6.1 Conclusions

On the basis of the results of this assessment and the previous investigations conducted at the site, URS concludes the following:

- The results of soil investigations in 2005 did not detect soil contamination with respect to the following analytes: metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs were detected in soils in the vicinity of the site. Some slightly elevated concentrations of PAH compounds were detected in soil to the very northwest of allotment 3, and to the distant south of allotment 1, however no PAH compounds were detected in soil in close proximity to the allotments of interest.
- No data was available to provide an assessment of the risk of acid sulfate soil or soil salinity at the site. Given the proximity of the site to marine waters, it is considered that there is potential for there to be acid sulfate soils and saline soils at the site.
- The results of groundwater investigations in 2005 indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the NB site.
- Total PAHs exceeded nominated ILs in groundwater samples collected from five monitoring wells. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to (western side) of allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.
- Based on these findings, the allotments of interest are not considered to be contaminated and are considered suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the allotments of interest have lead to contamination of the surrounding water bodies.

6.2 Recommendations

On the basis of the results of this and previous investigations conducted at the site, URS recommends the following:

- Prior to the commencement of site work and in areas were soil disturbance is likely, soil sampling and analysis is required to further establish the presence of ASS and saline soil. Should testing reveal that either ASS or saline soil is present, then an Acid Sulfate Management Plan and/or a Salinity Management Plan shall be prepared prior to the commencement of site work, and the management measures detailed in that Plan shall be implemented.

Limitations Section 7

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Maunsell/AECOM and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated 10 July 2008.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between 3rd September 2008 -19th September 2008 and 10th June 2012 – 21st June 2012 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

References Section 8

Maunsell AECOM (2008) *May 2008 Preliminary Environmental Assessment, Soybean Processing and Biodiesel Production Facility.*

Public Works Department (1984) *May 1984 Port Kembla Grain Terminal Preliminary Geotechnical Investigation for Conceptual Design Report.*

Stone, Y., Ahern C.R., and Blunden, B. 1998. *Acid Sulfate Soil Manual 1998.* Acid Sulfate Soil Management Advisory Committee, Wollongbar, NSW, Australia.

URS Australia (2004) *Phase II Environmental Site Assessment Port Kembla Port Corporation - Inner and Outer Harbour Port Kembla NSW.*

URS Australia (2005) *June 2005 Inner Harbour and Outer Harbour Groundwater and Surface Water Assessment Port Kembla Port Corporation - Port Kembla NSW*

URS Australia (2006) *January 2005 Post Phase 2 Environmental Site Assessment Port Kembla Port Corporation, Inner Harbour Soil and Groundwater Assessment - Port Kembla NSW.*

Plates

Plate 1. Allotment 1 looking south towards the Inner Harbour.

Plates

Plate 2. Allotment 3 looking north.

Plate 3. Allotment 5 looking north. Turbines are temporarily stored on this allotment to the west.

Plates

Plate 4. Allotment 5 slumping of fill material, looking north.

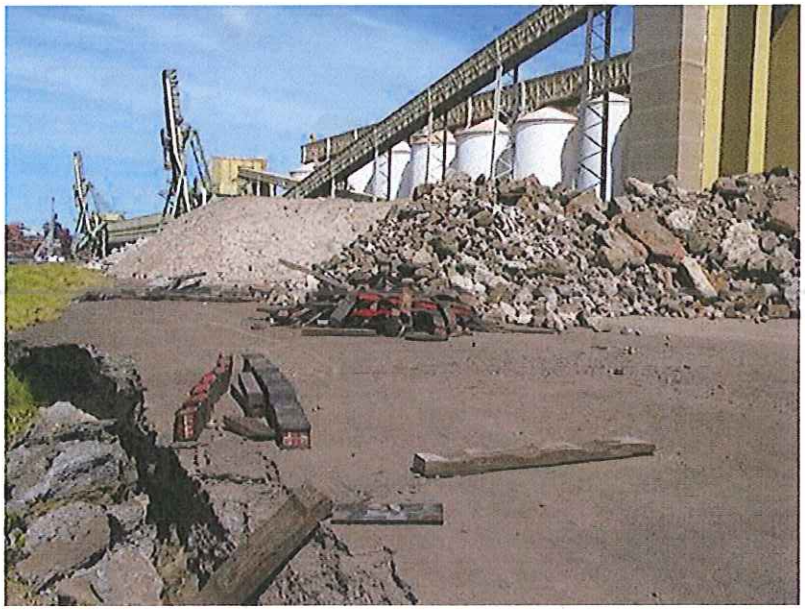

Plate 5. Allotment 5 looking south. Stockpiles of dredged material and gravel are temporarily stored on this allotment. The GrainCorp silos are to the southwest.

Plates

Plate 6. Allotment 6 facing north. The stormwater pit is in the foreground, and a large stockpile of gravel is present to the north.

Tables

Table 1

Historical Groundwater Monitoring Well Gauging Data

Maunsell/National Biodiesel Site Investigation (2008)

Well	Eastings (MGA)	Northings (MGA)	Well Depth (mBGS)	Well Depth (mAHD)	TOC (mAHD)	SWL_1 (mBGS) 25/11/2003	SWL_2 (mBGS) 6/12/2004	SWL_1 (mAHD) 25/11/2003	SWL_2 (mAHD) 6/12/2004	SWL_3 (mBGL) 30/11/2005	SWL_3 (mAHD) 30/11/2005
IHMW1	289898.052	1186709.216	4.800	2.48	7.281	4.571	4.260	2.710	3.021	-	-
IHMW2	289874.274	1186932.124	6.000	2.52	8.52	0.612	0.975	7.908	7.545	-	-
IHMW3	289852.506	1186509.994	6.000	0.30	6.299	2.532	3.685	3.767	2.614	-	-
IHMW4	289862.779	1186095.553	6.660	-0.48	6.18	5.285	5.085	0.895	1.095	-	-
IHMW5	290133.443	1186774.23	6.000	0.68	6.681	4.036	3.865	2.645	2.816	-	-
IHMW6	289721.556	1186845.186	7.000	1.01	8.008	3.132	2.365	4.876	5.643	-	-
IHMW7	289656.821	1186176.273	7.000	-3.04	3.964	0.805	2.475	3.159	1.489	-	-
IHMW8	290085.128	1187047.926	6.000	0.66	6.657	3.783	4.360	2.874	2.297	-	-
IHMW9	289686.29	1186526.705	6.000	-0.41	5.586	3.434	3.175	2.152	2.411	-	-
IHMW10	290133.61	1186313.093	6.000	-0.94	5.056	4.333	4.390	0.723	0.666	-	-
MW11	289751.15	1187125.53	6.580	2.68	9.26	NA	NA	NA	NA	6.220	3.040
MW12	289933.54	1187045.44	3.940	5.88	9.82	NA	NA	NA	NA	1.080	8.740
MW13	289999.46	1186703.48	5.330	1.88	7.21	NA	NA	NA	NA	3.440	3.770
MW14	289628.51	1186856.26	6.760	2.27	9.03	NA	NA	NA	NA	1.760	7.270
MW15	289927.58	1186365.37	6.300	-0.15	6.15	NA	NA	NA	NA	4.620	1.530
MW16	289932.38	1186202.24	6.200	0.22	6.42	NA	NA	NA	NA	5.310	1.110
MW17	290004.11	1185920.39	5.330	-3.07	2.26	NA	NA	NA	NA	1.780	0.480
MW18	289707.35	1186037.89	3.170	1.08	4.25	NA	NA	NA	NA	dry	dry
MW19	289508.14	1186219.46	6.200	-0.77	5.43	NA	NA	NA	NA	3.670	1.760
MW20	289573.21	1186521.46	5.080	-0.26	5.74	NA	NA	NA	NA	2.900	2.840
MW21	289786.73	1186331.20	6.290	-0.72	5.57	NA	NA	NA	NA	4.640	0.930
MW22	290339.89	1186355.15	6.270	-1.83	4.44	NA	NA	NA	NA	3.110	1.330

LEGEND
BGS: Below Ground Surface
AHD: Australian Hieght Datum
SWL: Static Water Level
NA: Monitoring Well did not exist
(1) URS June 2004
(2) URS June 2005
(3) URS Jan 2006

Table 2
Historical Groundwater Field Observations and Water Quality Parameters.
Maunsell/National Biodiesel Site Investigation (2008)

Well ID	Sampling Date	Vol Removed (L)	EC (uS/cm)	TDS mg/L	pH	T (C)	Redox		Dissolved Oxygen (mg/L)	Comments (Color, turbidity)
							E_r (mV)	E_h (mV)		
IHMW1	27-Nov-03	15	30100	21070	7.33	21.3	-153	77	0.17	Grey with high sediment. Dry at 15L
	09-Dec-04	15	29900	20930	6.95	22.7	-51	179	1.22	Turbid brown with sediment
IHMW2	27-Nov-03	15	37200	26040	7.31	19.9	-168	62	0.07	Black / Grey with sediment. Dry at 15L
	09-Dec-04	10	34700	24290	8.15	22.9	-43	187	0.32	Black/grey with sediment. Dry at 15L
IHMW3	27-Nov-03	60	7850	5495	12.26	22.3	-320	-90	1.51	Clear
	09-Dec-04	30	6690	4683	12.32	25.4	161	69	2.59	Clear
IHMW4	27-Nov-03	60	4850	3395	7.16	20.8	-119	111	1.45	Cloudy
	09-Dec-04	60	3920	2744	7.05	23.3	-99	131	1.14	Cloudy
IHMW5	27-Nov-03	80	5510	3857	11.36	19.8	-276	-46	1.14	Clear
	09-Dec-04	80	4820	3374	10.82	22.2	-202	28	1.02	Clear
IHMW6	27-Nov-03	20	67800	47460	7.44	20.5	-107	123	1.10	Cloudy
	09-Dec-04	15	21820	15274	10.01	23.6	-34	196	2.11	Cloudy
IHMW7	27-Nov-03	80	10760	7532	12.67	20.7	-161	69	5.95	Clear
	09-Dec-04	40	5890	4123	8.39	23.2	-329	-99	5.89	Clear
IHMW8	27-Nov-03	20	31700	22190	7.36	19.3	-79	-308	3.22	Cloudy
	09-Dec-04	10	58800	41860	7.28	22.9	-147	-308	0.31	Cloudy
IHMW9	27-Nov-03	60	10170	7119	7.83	20.4	-171	59	1.27	Cloudy Brown
	09-Dec-04	60	11230	7861	4.58	21.1	-47	183	1.83	Clear
IHMW10	27-Nov-03	20	1315	920.5	7.15	20.5	-226	4	0.24	Cloudy
	09-Dec-04	20	1324	926.8	7.49	25	-92	138	1.84	Clear
MW11	29-Nov-05	30	17770	12439	10.82	20.6	-232	-2	2.78	Muddy, sulfur odour
MW12	29-Nov-05	60	5200	3640	12.46	20.9	88	318	8.59	Cloudy
MW13	29-Nov-05	4	1698	1188.6	8.32	21.5	-58	172	10.65	Black, silty, dry at 4L
MW14	29-Nov-05	45	1690	1183	11.97	21.3	-174	56	7.17	Murky, dry at 45L
MW15	29-Nov-05	20	2233	1563.1	7.84	20	-126	104	3.19	Cloudy
MW16	29-Nov-05	10	6040	4228	7.62	20.4	-107	123	4.22	Silty, dry at 10L
MW17	30-Nov-05	120	885	619.5	7.96	20.1	54	284	3.15	Cloudy
MW18	29-Nov-05	-	-	-	-	-	-	-	-	DRY
MW19	29-Nov-05	30	1541	1078.7	7.78	21	-40	190	5.70	Clear
MW20	29-Nov-05	70	6580	4606	7.75	16	-87	143	2.62	Cloudy
MW21	29-Nov-05	50	2670	1869	7.13	16.2	-99	131	2.76	Cloudy
MW22	29-Nov-05	50	390	273	8.10	17.2	-98	132	2.85	Cloudy, some silt, sulfur odour

Notes

E_h = Er + 230mV

Table 3
Adopted Investigation Levels for Soil
Maunsell/National Biodiesel Site Investigation (2008)

Applicable Investigation Levels		NEPM Health Investigation Levels (F) (1999).	**NSW EPA Guidelines for Assessing Service Station Sites (1994).**
Analyte			
TPH	Units		
TPH (C6-C9 Fraction)	mg/kg	-	65
TPH (C10-C14 Fraction)	mg/kg	-	-
TPH (C15-C28 Fraction)	mg/kg	-	-
TPH (C29-C36 Fraction)	mg/kg	-	-
Total TPH (C10-C36 Fraction)	mg/kg	-	1000
BTEX			
Benzene	mg/kg	-	1
Toluene	mg/kg	-	130
Ethylbenzene	mg/kg	-	50
m- & p-Xylene	mg/kg	-	-
o-Xylene	mg/kg	-	-
Total Xylene	mg/kg	-	25
Metals			
Arsenic	mg/kg	500	-
Chromium (as VI)	mg/kg	500	-
Copper	mg/kg	5000	-
Lead	mg/kg	1500	300
Mercury	mg/kg	75	-
Nickel	mg/kg	3000	-
Zinc	mg/kg	35000	-
Pesticides			
Aldrin and Dieldrin	mg/kg	50	-
Chlordane	mg/kg	250	-
DDT+DDE+DDD	mg/kg	1000	-
Heptachlor	mg/kg	50	-
PAH			
Benzo(a)pyrene	mg/kg	5	1
Naphthalene	mg/kg	-	-
Pyrene	mg/kg	-	-
Total PAHs	mg/kg	100	-
Phenol			
Phenol	mg/kg	42500	20

Notes:
- no guideline or superceeded by other referenced guideline.

Table 4

Summary of Soil Analytical Results - Metal/Metalloids
Maunsell/National Biodiesel Site Investigation (2008)

Location	IHMW1	IHMW10	IHMW10	IHMW2	IHMW2	IHMW3	IHMW3	IHMW3	IHMW4	IHMW5	IHMW6	IHMW7	IHMW7	IHMW7	IHMW8	IHMW9
Sample ID	IHMW1_4.9-5.0	IHMW10_0.3-0.4	IHMW10_3.9-4.0	IHMW2_0.3-0.4	IHMW2_1.9-2.0	IHMW3_3.9-4.0	QC1	QC2	IHMW4_0.4-0.5	IHMW5_0.3-0.4	IHMW6_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4	IHMW8_4.9-5.0	IHMW9_4.9-5.0
Date Sampled	12-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	11-Nov-03	11-Nov-03	11-Nov-03	11-Nov-03	17-Nov-03	13-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	17-Nov-03	11-Nov-03
QAQC Sample Type	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS	FD	FT	PS	PS
Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**												
Metals																
Arsenic	1	mg/kg	500		2	3	2	4	17	7	10	<5	1	<1	1	5	2	<5	19	6
Cadmium	1	mg/kg	100		<1	1	<1	1	<1	<1	<1	<0.5	<1	<1	2	1	<1	<0.5	<1	<1
Chromium	1	mg/kg			14	467	5	487	53	36	19	400	3	52	469	419	312	21	30	15
Chromium (VI)	1	mg/kg	500		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	1	mg/kg	5000		28	63	3	71	37	18	39	23	8	37	134	68	51	12	27	9
Lead	1	mg/kg	1500	300	8	5	1	9	129	11	11	9	<1	<1	2	7	7	7	43	17
Mercury	0.1	mg/kg	75		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1
Zinc	1	mg/kg	35000		46	43	6	111	838	53	63	45	<1	14	65	59	42	37	251	109

INVESTIGATION LEVELS

Greater than NEPM - F
Commercial/ Industrial HIL

Exceeds the NSW EPA Service Station - Soil 1994
Guidelines for assesing service station sites

LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Table 4

Summary of Soil Analytical Results - Metal/Metalloids
Maunsell/National Biodiesel Site Investigation (2008)

Location	MW11	MW12	MW13		MW14	MW15	MW16	MW17		MW17	MW18	MW19	MW20		MW21	MW22		SB1
Sample ID	MW11_4.8-5.0	MW12_3.8-4.0	MW13_0.5-0.7	MW13_0.5-0.7 CHK	MW14_2.8-3.0	MW15_0.4-0.5	MW16_0.9-1.0	MW17_1.8-2.0	QC05	MW17_3.8-4.0	MW18_1.8-2.0	MW19_3.8-4.0	MW20_2.8-3.0	MW20_2.8-3.0 CHK	MW21_1.8-2.0	MW22_5.8-6.0	MW22_5.8-6.0 CHK	SB1_2.8-3.0
Date Sampled	07-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	09-Nov-05	09-Nov-05	07-Nov-05	08-Nov-05	08-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	08-Nov-05	08-Nov-05	07-Nov-05
QAQC Sample Type	PS	PS	PS	LD	PS	PS	PS	PS	FD	PS	PS	PS	PS	LD	PS	PS	LD	PS

Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**																
Metals																				
Arsenic	1	mg/kg	500		7	<5	<5	-	6	12	<5	17	12	<5	<5	<5	<5	<5	<5	<5	<5	9
Cadmium	1	mg/kg	100		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	1	mg/kg			14	17	<2	-	23	16	7	39	33	2	67	44	14	7	17	2	<2	23
Chromium (VI)	1	mg/kg	500		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	<1	<1	-	<1
Copper	1	mg/kg	5000		14	14	27	-	14	20	6	11	15	<5	17	6	8	6	13	<5	<5	15
Lead	1	mg/kg	1500	300	32	8	19	-	15	9	9	52	47	<5	<5	<5	38	26	10	<5	<5	41
Mercury	0.1	mg/kg	75		<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
Zinc	1	mg/kg	35000		205	65	41	-	121	41	52	342	374	22	68	43	220	143	74	10	7	248

INVESTIGATION LEVELS

Greater than NEPM - F
Commercial/ Industrial HIL

Exceeds the NSW EPA Service Station - Soil 1994
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LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Table 4

Summary of Soil Analytical Results - Metal/Metalloids
Maunsell/National Biodiesel Site Investigation (2008)

Location	SB2	SB3	SB4		SB5	SB6		SB7	SB8	SB9	SB10			SB10		SB11	SB12	SB13	SB14
Sample ID	SB2_1.8-2.0	SB3_0.8-1.0	SB4_1.8-2.0	SB4_1.8-2.0 CHK	SB5_3.8-4.0	SB6_1.8-2.0	SB6_1.8-2.0 CHK	SB7_0.8-1.0	SB8_0.8-1.0	SB9_1.8-2.0	SB10_2.8-3.0	QC08	QC09	SB10_3.8-4.0	SB10_3.8-4.0 CHK	SB11_0.3-0.5	SB12_2.8-3.0	SB13_2.8-3.0	SB14_0.8-1.0
Date Sampled	07-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	09-Nov-05	09-Nov-05	07-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05
QAQC Sample Type	PS	PS	PS	LD	PS	PS	LD	PS	PS	PS	PS	FD	FT	PS	LD	PS	PS	PS	PS
Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**															
Metals																			
Arsenic	1	mg/kg	500		<5	<5	8	6	<5	6		10	9	<5	6	<5	<5	<5	-	<5	<5	<5	<5
Cadmium	1	mg/kg	100		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	1	mg/kg			45	671	20	15	9	68		44	32	368	13	20	9	4	-	8	<2	<2	21
Chromium (VI)	1	mg/kg	500		<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	1	mg/kg	5000		16	<5	16	11	22	19		16	17	<5	<5	6	<5	<5	-	7	<5	<5	14
Lead	1	mg/kg	1500	300	7	<5	54	29	7	12		10	19	<5	16	24	7	14	-	<5	<5	<5	<5
Mercury	0.1	mg/kg	75		<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
Zinc	1	mg/kg	35000		74	14	382	199	50	73		48	153	103	93	190	74	84	-	89	20	<5	10

INVESTIGATION LEVELS

Greater than NEPM - F
Commercial/ Industrial HIL

Exceeds the NSW EPA Service Station - Soil 1994
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LEGEND
NA - Not Analyzed
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FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Table 5
Summary of Soil Analytical Results - VOCs
Maunsell/National Biodiesel Site Investigation (2008)

Location					IHMW10	IHMW5	IHMW7	IHMW7	IHMW7
Sample ID					IHMW10_0.3-0.4	IHMW5_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4
Date Sampled					12-Nov-03	17-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03
QAQC Sample Type					PS	PS	PS	FD	FT
Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**					
Fumigants									
1,2-Dibromoethane (EDB)	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,2-Dichloropropane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
2,2-Dichloropropane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
trans-1,3-Dichloropropylene	1	mg/kg			<1	<1	<1	<1	<1
Haloethers									
Bis(2-ethylhexyl) phthalate	5	mg/kg			<5	<5	<5	<5	<2
Halogenated Aliphatics									
1,1,1,2-Tetrachloroethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,1,1-Trichloroethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,1,2,2-Tetrachloroethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,1,2-Trichloroethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,1-Dichloroethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,1-Dichloroethene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,1-Dichloropropene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,2,3-Trichloropropane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,2-Dibromo-3-chloropropane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,2-Dichloroethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,3-Dichloropropane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Bromomethane	5	mg/kg			<5	<5	<5	<5	<1
Carbon Tetrachloride	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Chloroethane	5	mg/kg			<5	<5	<5	<5	<1
Chloromethane	5	mg/kg			<5	<5	<5	<5	<1
cis-1,2-Dichloroethene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
cis-1,4-Dichloro-2-butene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	NA
Dibromomethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Dichlorodifluoromethane	5	mg/kg			<5	<5	<5	<5	<1
Hexachlorobutadiene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Iodomethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	NA
Pentachloroethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	NA
Tetrachloroethene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
trans-1,2-Dichloroethene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
trans-1,4-Dichloro-2-butene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	NA
Trichloroethene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Trichlorofluoromethane	5	mg/kg			<5	<5	<5	<5	<1
Vinyl chloride	5	mg/kg			<5	<5	<5	<5	<1
Halogenated Aromatics									
1,2,3-Trichlorobenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,2,4-Trichlorobenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,2-Dichlorobenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,3-Dichlorobenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,4-Dichlorobenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
2-Chlorotoluene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
4-Chlorotoluene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Bromobenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Monocyclic Aromatics									
1,2,4-Trimethylbenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
1,3,5-Trimethylbenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Isopropylbenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
n-Butylbenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
n-Propylbenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
p-Isopropyltoluene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
sec-Butylbenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Styrene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
tert-Butylbenzene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Oxygenated Compounds									
2-Butanone (MEK)	5	mg/kg			<5	<5	<5	<5	NA
2-Hexanone (MBK)	5	mg/kg			<5	<5	<5	<5	NA
4-Methyl-2-pentanone (MIBK)	5	mg/kg			<5	<5	<5	<5	NA
Vinyl Acetate	5	mg/kg			<5	<5	<5	<5	NA
Sulfonated Compounds									
Carbon disulfide	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	NA
Bromodichloromethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Bromoform	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Chloroform	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
Dibromochloromethane	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<1
cis-1,3-Dichloropropene	1	mg/kg			<1	<1	<1	<1	<1

INVESTIGATION LEVELS

Greater than NEPM - F Commercial/ Industrial HIL Guidelines 1999

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2003 Data taken from URS June 2004

Table 6

Summary of Soil Analytical Results - TPH & BTEX
Maunsell/National Biodiesel Site Investigation (2008)

Location	IHMW1	IHMW10	IHMW10	IHMW2	IHMW2	IHMW3	IHMW3	IHMW3	IHMW4	IHMW5	IHMW6	IHMW7	IHMW7	IHMW7	IHMW8	IHMW9
Sample ID	IHMW1_4.9-5.0	IHMW10_0.3-0.4	IHMW10_3.9-4.0	IHMW2_0.3-0.4	IHMW2_1.9-2.0	IHMW3_3.9-4.0	QC1	QC2	IHMW4_0.4-0.5	IHMW5_0.3-0.4	IHMW6_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4	IHMW8_4.9-5.0	IHMW9_4.9-5.0
Date Sampled	12-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	11-Nov-03	11-Nov-03	11-Nov-03	11-Nov-03	17-Nov-03	13-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	17-Nov-03	11-Nov-03
Depth (meters)	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS	FD	FT	PS	PS
QAQC Sample Type																

Analyte	LOR	Units	NEPM - F	NSW EPA														
TPH																		
TPH (C6-C9 Fraction)	2	mg/kg		65	<2	<2	<2	<2	<2	<2	<2	<5	<2	<2	<2	<2	<2	<5	<2	<2
TPH (C10-C14 Fraction)	50	mg/kg			<50	<50	<50	<50	<50	<50	<50	<10	<50	<50	<50	<50	<50	<10	<50	<50
TPH (C15-C28 Fraction)	100	mg/kg			284	<100	<100	<100	<100	<100	<100	<50	<100	<100	<100	<100	<100	<50	<100	<100
TPH (C29-C36 Fraction)	100	mg/kg			127	<100	<100	<100	<100	<100	<100	<50	<100	<100	<100	<100	<100	<50	<100	<100
Total TPH (C10-C36 Fraction)		mg/kg		1000	411															
BTEX																		
Benzene	0.2	mg/kg		1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.2	<0.2
Toluene	0.2	mg/kg		130	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.2	<0.2	<0.2	<0.2	<0.5	<1	<0.2	<0.2
Ethylbenzene	0.2	mg/kg		50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.2	<0.2	<0.2	<0.2	<0.5	<1	<0.2	<0.2
m- & p-Xylene	0.2	mg/kg			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.5	<2	<0.2	<0.2
o-Xylene	0.2	mg/kg			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	<0.2	<0.2	<0.2	<0.2	<0.5	<1	<0.2	<0.2
Total Xylene		mg/kg		25																

INVESTIGATION LEVELS

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2003 Data taken from URS June 2004
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Table 6

Summary of Soil Analytical Results - TPH & BTEX
Maunsell/National Biodiesel Site Investigation (2008)

Location	MW11		MW12	MW13	MW14	MW15	MW16	MW17		MW17	MW18	MW19		MW20	MW21	MW22	SB1	SB2	SB3
Sample ID	MW11_4.8-5.0	MW11_4.8-5.0	MW12_3.8-4.0	MW13_0.5-0.7	MW14_2.8-3.0	MW15_0.4-0.5	MW16_0.9-1.0	MW17_1.8-	QC05	MW17_3.8-4.0	MW18_1.8-2.0	MW19_3.8-4.0	MW19_3.8-4.0	MW20_2.8-3.0	MW21_1.8-2.0	MW22_5.8-	SB1_2.8-3.0	SB2_1.8-2.0	SB3_0.8-1.0
Date Sampled	07-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	09-Nov-05	09-Nov-05	07-Nov-05	08-Nov-05	08-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	08-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05
Depth (meters)																			
QAQC Sample Type	PS	LD	PS	PS	PS	PS	PS	PS	FD	PS	PS	PS	LD	PS	PS	PS	PS	PS	PS

Analyte	LOR	Units	NEPM - F	NSW EPA																	
TPH																					
TPH (C6-C9 Fraction)	2	mg/kg		65	<2	<2	<2	15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
TPH (C10-C14 Fraction)	50	mg/kg			<50	-	<50	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
TPH (C15-C28 Fraction)	100	mg/kg			<100	-	<100	<100	<100	<100	<100	190	<100	<100	<100	-	<100	<100	<100	<100	<100
TPH (C29-C36 Fraction)	100	mg/kg			<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
Total TPH (C10-C36 Fraction)		mg/kg		1000	-	-	-	-	-	-	-	190	-	-	100	-	-	-	-	-	-
BTEX																					
Benzene	0.2	mg/kg		1	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.2	mg/kg		130	<0.2	<0.2	<0.2	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	0.2	mg/kg		50	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m- & p-Xylene	0.2	mg/kg			<0.2	<0.2	<0.2	2.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2
o-Xylene	0.2	mg/kg			<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Xylene		mg/kg		25	-	-	-	2.6	-	-	-	-	-	-	-	-	-	-	-	0.3	-

INVESTIGATION LEVELS

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PS - Primary Sample
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FT - Field Triplicate
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Table 6

Summary of Soil Analytical Results - TPH & BTEX
Maunsell/National Biodiesel Site Investigation (2008)

Location	SB4	SB5	SB6	SB7		SB8	SB9	SB10					SB10	SB11		SB12	SB13	SB14	
Sample ID	SB4_1.8-2.0	SB5_3.8-4.0	SB6_1.8-2.0	SB7_0.8-1.0	SB7_0.8-1.0	SB8_0.8-1.0	SB9_1.8-2.0	SB10_2.8-3.0	QC08	QC08CHK	QC09	QC09CHK	SB10_3.8-4.0	SB11_0.3-0.5	SB11_0.3-0.5	SB12_2.8-3.0	SB13_2.8-3.0	SB14_0.8-1.0	SB14_0.8-1.0
Date Sampled	07-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	09-Nov-05	09-Nov-05	07-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05
Depth (meters)	PS	PS	PS	PS	LD	PS	PS	PS	FD	LD	FT	LD	PS	PS	LD	PS	PS	PS	LD
QAQC Sample Type																			

Analyte	LOR	Units	NEPM - F	NSW EPA																	
TPH																					
TPH (C6-C9 Fraction)	2	mg/kg		65	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	-	<2	<2	<2	-
TPH (C10-C14 Fraction)	50	mg/kg			<50	<50	<50	<50	-	<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50	<50	<50
TPH (C15-C28 Fraction)	100	mg/kg			<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100
TPH (C29-C36 Fraction)	100	mg/kg			<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100
Total TPH (C10-C36 Fraction)		mg/kg		1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BTEX																					
Benzene	0.2	mg/kg		1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-
Toluene	0.2	mg/kg		130	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-
Ethylbenzene	0.2	mg/kg		50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-
m- & p-Xylene	0.2	mg/kg			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-
o-Xylene	0.2	mg/kg			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	-
Total Xylene		mg/kg		25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

INVESTIGATION LEVELS

Greater than NEPM - F Commercial/ Industrial HIL Guidelines 1999

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LEGEND
NA - Not Analyzed
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2003 Data taken from URS June 2004
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Table 7
Summary of Soil Analytical Results - Phenols
Maunsell/National Biodiesel Site Investigation (2008)

Location	IHMW10	IHMW5	IHMW7	IHMW7	IHMW7	MW11
Sample ID	IHMW10_0.3-0.4	IHMW5_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4	MW11_4.8-5.0
Date Sampled	12-Nov-03	17-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	07-Nov-05
QAQC Sample Type	PS	PS	PS	FD	FT	PS

Analyte	LOR	Units	NEPM - F	NSW EPA						
Phenols										
2,4,5-Trichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Nitrophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3 & 4-Methylphenol	1	mg/kg			<1	<1	<1	<1	<0.5	<1
4-Chloro-3-methylphenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	1	mg/kg			<1	<1	<1	<1	<1	<2
Phenol	0.5	mg/kg	42500		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

INVESTIGATION LEVELS

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Table 7
Summary of Soil Analytical Results - Phenols
Maunsell/National Biodiesel Site Investigation (2008)

Location	MW16	SB6	SB11	SB14
Sample ID	MW16_0.9-1.0	SB6_1.8-2.0	SB11_0.3-0.5 CHK	SB14_0.8-1.0 CHK
Date Sampled	09-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05
QAQC Sample Type	PS	PS	LD	LD

Analyte	LOR	Units	NEPM - F	NSW EPA				
Phenols								
2,4,5-Trichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
2-Methylphenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
2-Nitrophenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
3 & 4-Methylphenol	1	mg/kg			<1	<1	<1	<1
4-Chloro-3-methylphenol	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	1	mg/kg			<2	<2	<1	<1
Phenol	0.5	mg/kg	42500		<0.5	<0.5	<0.5	<0.5

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Table 8
Summary of Soil Analytical Results - PAHs
Maunsell/National Biodiesel Site Investigation (2008)

Location				IHMW1	IHMW10	IHMW10	IHMW2	IHMW2	IHMW3	IHMW3	IHMW3	IHMW4	IHMW5	IHMW6	IHMW7	IHMW7	IHMW7	IHMW8	IHMW9
Sample ID				IHMW1_4.9-5.0	IHMW10_0.3-0.4	IHMW10_3.9-4.0	IHMW2_0.3-0.4	IHMW2_1.9-2.0	IHMW3_3.9-4.0	QC1	QC2	IHMW4_0.4-0.5	IHMW5_0.3-0.4	IHMW6_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4	IHMW8_4.9-5.0	IHMW9_4.9-5.0
Date Sampled				12-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	11-Nov-03	11-Nov-03	11-Nov-03	11-Nov-03	17-Nov-03	13-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	17-Nov-03	11-Nov-03
QAQC Sample Type				PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS	FD	FT	PS	PS
Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**															
PAHs																			
Acenaphthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	0.5	mg/kg	5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5
Chrysene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenzo(a,h)anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5
Fluoranthene	0.5	mg/kg			0.5	<0.5	<0.5	<0.5	0.6	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,4-cd)pyrene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5
Naphthalene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	4.1	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<5	<1	<0.5	0.6
Phenanthrene	0.5	mg/kg			2.1	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5	mg/kg			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAHs		mg/kg	100	20	3.1				5.9	1.2		0.8								0.6

INVESTIGATION LEVELS

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Table 8
Summary of Soil Analytical Results - PAHs
Maunsell/National Biodiesel Site Investigation (2008)

Location				MW11	MW12	MW13	MW14	MW15	MW16	MW17		MW17	MW18	MW19	MW20	MW21	MW22	SB1	SB2	SB3	SB4	SB5
Sample ID				MW11_4.8-	MW12_3.8-4.0	MW13_0.5-0.7	MW14_2.8-3.0	MW15_0.4-0.5	MW16_0.9-1.0	MW17_1.8-2.0	QC05	MW17_3.8-4.0	MW18_1.8-2.0	MW19_3.8-	MW20_2.8-	MW21_1.8-2.0	MW22_5.8-6.0	SB1_2.8-3.0	SB2_1.8-2.0	SB3_0.8-1.0	SB4_1.8-2.0	SB5_3.8-4.0
Date Sampled				07-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	09-Nov-05	09-Nov-05	07-Nov-05	08-Nov-05	08-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	08-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	07-Nov-05	08-Nov-05
QAQC Sample Type				PS	PS	PS	PS	PS	PS	PS	FD	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS
Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**																		
PAHs																						
Acenaphthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.1	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	1.1	<0.5
Benzo(a)pyrene	0.5	mg/kg	5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**1.6**	**1.3**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**1.2**	<0.5	<0.5	**1.4**	<0.5
Benzo(b)fluoranthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.4	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	1.2	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	0.9	<0.5
Benzo(k)fluoranthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	1	<0.5
Chrysene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.1	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	1.1	<0.5
Dibenzo(a,h)anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5	mg/kg			0.9	<0.5	<0.5	0.8	<0.5	<0.5	5.2	2.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.2	<0.5	<0.5	2	<0.5
Fluorene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,4-cd)pyrene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	0.8	<0.5
Naphthalene	0.5	mg/kg			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	0.5	mg/kg			0.8	<0.5	2	0.5	<0.5	<0.5	1.4	0.9	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.9	0.6	<0.5	0.8	<0.5
Pyrene	0.5	mg/kg			0.7	<0.5	<0.5	0.7	<0.5	<0.5	3.9	2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.4	<0.5	<0.5	1.6	<0.5
Total PAHs		mg/kg	100	20	2.4	0	2	2	-	-	**24.3**	12.7	-	0.5	-	0	-	-	13	0.6	-	11.9	0

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Table 8
Summary of Soil Analytical Results - PAHs
Maunsell/National Biodiesel Site Investigation (2008)

Location					SB6	SB7	SB8	SB9	SB10				SB10	SB11		SB12	SB13	SB14	
Sample ID					SB6_1.8-2.0	SB7_0.8-1.0	SB8_0.8-1.0	SB9_1.8-2.0	SB10_2.8-3.0	QC08	QC08CHK	QC09	SB10_3.8-4.0	SB11_0.3-0.5	SB11_0.3-0.5	SB12_2.8-3.0	SB13_2.8-3.0	SB14_0.8-1.0	SB14_0.8-
Date Sampled					08-Nov-05	08-Nov-05	09-Nov-05	09-Nov-05	07-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	09-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05	08-Nov-05
QAQC Sample Type					PS	PS	PS	PS	PS	FD	LD	FT	PS	PS	LD	PS	PS	PS	LD
Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**															
PAHs																			
Acenaphthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	0.5	mg/kg	5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenzo(a,h)anthracene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	1.6	0.8	0.8	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,4-cd)pyrene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	0.5	mg/kg			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	1.4	0.8	0.7	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAHs		mg/kg	100	20	-	-	-	-	4.8	1.6	1.5	-	-	3.5	-	-	-	-	-

INVESTIGATION LEVELS

Greater than NEPM - F Commercial/ Industrial HIL Guidelines 1999

Exceeds the NSW EPA Service Station - Soil 1994 Guidelines for assesing service station sites

LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Table 9

Summary of Soil Analytical Results - Phthalate Esters
Maunsell/National Biodiesel Site Investigation (2008)

Location	IHMW10	IHMW5	IHMW7	IHMW7	IHMW7
Sample ID	IHMW10_0.3-0.4	IHMW5_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4
Date Sampled	12-Nov-03	17-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03
QAQC Sample Type	PS	PS	PS	FD	FT

Analyte	**LOR**	**Units**	**NEPM - F**	**NSW EPA**					
Phthalate Esters									
Butyl benzyl phthalate	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<2
Di-n-butyl phthalate	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<2
Di-n-octylphthalate	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<2
Diethyl phthalate	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<2
Dimethyl phthalate	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<2
Total Phthalate Esters		mg/kg							

INVESTIGATION LEVELS

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LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004

Table 10
Summary of Soil Analytical Results - Pesticides
Maunsell/National Biodiesel Site Investigation (2008)

Location				IHMW10	IHMW5	IHMW7	IHMW7	IHMW7	MW11	MW16	SB6
Sample ID				IHMW10_0.3-0.4	IHMW5_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4	MW11_4.8-5.0	MW16_0.9-1.0	SB6_1.8-2.0
Date Sampled				12-Nov-03	17-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	07-Nov-05	09-Nov-05	08-Nov-05
QAQC Sample Type				PS	PS	PS	FD	FT	PS	PS	PS
Analyte	**LOR**	**Units**	**NEPM - F**								
OC Pesticides											
a-BHC	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Aldrin	0.05	mg/kg	50	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
b- & g-BHC	0.1	mg/kg		<0.2	<0.1	<0.1	<0.1	NA	<0.05	<0.05	<0.05
Chlordane - Cis	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Chlordane - Trans	0.05	mg/kg	250	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
d-BHC	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
DDD	0.05	mg/kg		<0.1	<0.05	0.06	<0.05	<0.1	<0.05	<0.05	<0.05
DDE	0.05	mg/kg	1000	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
DDT	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2
Dieldrin	0.05	mg/kg	50	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Endosulfan 1	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Endosulfan 2	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Endosulfan sulfate	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Endrin	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Endrin aldehyde	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	NA	NA	NA
Endrin ketone	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05
HCB	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Heptachlor	0.05	mg/kg	50	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Heptachlor epoxide	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05
Methoxychlor	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2
Total OC Pesticides		mg/kg				0.06					
OP Pesticides											
Azinphos methyl	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05
Bromophos ethyl	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05
Carbofenthion	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05
Chlorfenvinphos E	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05
Chlorfenvinphos Z	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05
Chlorpyrifos	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05
Chlorpyrifos methyl	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05
Demeton-s-methyl	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05
Diazinon	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05
Dichlorvos	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dimethoate	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	NA	NA	NA
Ethion	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05
Fenamiphos	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05
Fenthion	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05
Malathion	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	NA	NA	NA
Monocrotophos	4	mg/kg		<4	<4	<4	<4	NA	<0.2	<0.2	<0.2
Parathion	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2
Parathion methyl	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.5	<0.05	<0.05	<0.05
Pirimiphos ethyl	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05
Prothiophos	0.05	mg/kg		<0.1	<0.05	<0.05	<0.05	<0.5	NA	NA	NA
Total OP Pesticides		mg/kg									

INVESTIGATION LEVELS

Greater than NEPM - F Commercial/ Industrial HIL Guidelines 1999

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LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Table 11
Summary of Soil Analytical Results - VCHs and PCBs
Maunsell/National Biodiesel Site Investigation (2008)

Sample ID	IHMW10	IHMW5	IHMW7	IHMW7	IHMW7	MW11		MW16	SB6
	IHMW10_0.3-0.4	IHMW5_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4	MW11_4.8-5.0	MW11_4.8-5.0 CHK	MW16_0.9-1.0	SB6_1.8-2.0
Date Sampled	12-Nov-03	17-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	07-Nov-05	07-Nov-05	09-Nov-05	08-Nov-05
Sample Type	PS	PS	PS	FD	FT	PS	LD	PS	PS
Analyte	**LOR**	**Units**	**NEPM 'F'**	**NSW EPA**					
Fumigants									
1,2-Dibromomethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
2,2-Dichloropropane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Chlorinated Aliphatic Compounds									
1,1,1,2-Tetrachloroethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,1-Dichloropropylene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,2-Dibromo-3-chloropropane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Bromobenzene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Bromomethane	5	mg/kg				<5	<5	<5	<5
Carbon Tetrachloride	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Chloroethane	5	mg/kg				<5	<5	<5	<5
Chloromethane	5	mg/kg				<5	<5	<5	<5
cis-1,2-Dichloroethene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
cis-1,4-Dichloro-2-butene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Dibromomethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	5	mg/kg				<5	<5	<5	<5
Iodomethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Pentachloroethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
trans-1,4-Dichloro-2-butene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	5	mg/kg				<5	<5	<5	<5
Vinyl chloride	5	mg/kg				<5	<5	<5	<5
Chlorinated Aromatic Compounds									
1,2,4-Trichlorobenzene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
2-Chlorotoluene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
4-Chlorotoluene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Trihalomethanes									
Bromochloromethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Bromoform	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Chloroform	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5	mg/kg				<0.5	<0.5	<0.5	<0.5
Oxygenated Compounds									

Sample ID	IHMW10	IHMW5	IHMW7	IHMW7	IHMW7	MW11		MW16	SB6
	IHMW10_0.3-0.4	IHMW5_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4	MW11_4.8-5.0	MW11_4.8-5.0 CHK	MW16_0.9-1.0	SB6_1.8-2.0
Date Sampled	12-Nov-03	17-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03	07-Nov-05	07-Nov-05	09-Nov-05	08-Nov-05
Sample Type	PS	PS	PS	FD	FT	PS	LD	PS	PS

Analyte	LOR	Units	NEPM 'F'	NSW EPA								
2-Butanone (MEK)	5	mg/kg								<5	<5	<5	<5
2-Hexanone (MBK)	5	mg/kg								<5	<5	<5	<5
4-Methyl-2-pentanone	5	mg/kg								<5	<5	<5	<5
Vinyl Acetate	5	mg/kg								<5	<5	<5	<5
Chlorinated Hydrocarbons													
1,2-Dichlorobenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
Monocyclic Aromatic Hydrocarbons													
1,2,4-Trimethylbenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
1,3,5-Trimethylbenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.2	mg/kg		50						<0.5	<0.5	<0.5	<0.5
Isopropylbenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
m&p-Xylene	0.2	mg/kg								<0.5	<0.5	<0.5	<0.5
n-Butylbenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
n-Propylbenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
o-Xylene	0.2	mg/kg								<0.5	<0.5	<0.5	<0.5
p-Isopropyltoluene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
sec-Butylbenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
Styrene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
tert-Butylbenzene	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
Toluene	0.2	mg/kg		130						<0.5	<0.5	<0.5	<0.5
Sulfonated Compounds													
Carbon disulfide	0.5	mg/kg								<0.5	<0.5	<0.5	<0.5
Naphthalene													
Naphthalene	0.5	mg/kg								<5	<5	<5	<5
Polychlorinated biphenyls													
Polychlorinated biphenyls	0.1	mg/kg	50		<0.5	<0.1	0.5	0.6	<1	<0.1	-	<0.1	<0.1

INVESTIGATION LEVELS

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FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Table 12
Summary of Soil Analytical Results - Total TOC
Maunsell/National Biodiesel Site Investigation (2008)

Location	IHMW10	IHMW5	IHMW7	IHMW7	IHMW7
Sample ID	IHMW10_0.3-0.4	IHMW5_0.3-0.4	IHMW7_0.9-1.0	QC3	QC4
Date Sampled	12-Nov-03	17-Nov-03	12-Nov-03	12-Nov-03	12-Nov-03
QAQC Sample Type	PS	PS	PS	FD	FT

Analyte	LOR	Units	NEPM - F	NSW EPA					
TOC									
Total Organic Carbon	0.5	mg/kg			<0.5	<0.5	<0.5	<0.5	<0.5

INVESTIGATION LEVELS

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LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004

Table 13
Adopted Investigation Levels for Groundwater
Maunsell/National Biodiesel Site Investigation (2008)

Applicable Investigation Levels		ANZECC 2000 Protection of Aquatic Ecosystems (Marine) 95% Level of Protection	NSW EPA Guidelines for Assessing Service Station Sites Protection of Aquatic Ecosystems
Analyte	**Units**		
TPH	Units		
TPH (C6-C9 Fraction)	ug/L	-	-
TPH (C10-C14 Fraction)	ug/L	-	-
TPH (C15-C28 Fraction)	ug/L	-	-
TPH (C29-C36 Fraction)	ug/L	-	-
Total TPH (C10-C36 Fraction)	ug/L	-	-
BTEX			
Benzene	ug/L	700	300
Toluene	ug/L	-	-
Ethylbenzene	ug/L	-	-
m- & p-Xylene	ug/L	-	-
o-Xylene	ug/L	-	-
Total Xylene	ug/L	-	380
Metals			
Arsenic (as Arsenic V)	mg/L		-
Cadmium	mg/L	0.0055	-
Chromium	mg/L	0.0274	
Chromium (as Chromium VI)	mg/L	0.0044	-
Copper	mg/L	0.0013	-
Lead	mg/L	0.0044	0.005
Mercury	mg/L	0.0004	-
Nickel	mg/L	0.07	-
Zinc	mg/L	0.015	-
PAHs			
Anthracene	ug/L		-
Benzo(a)pyrene	ug/L		-
Fluoranthene	ug/L		-
Naphthalene	ug/L	70	-
Pyrene	ug/L		-
Phenanthrene	ug/L		-
Total PAHs	ug/L		3
Phenols			
Pentachlorophenol	ug/L	22	
Phenols	ug/L	400	50

Notes:
- no guideline or superceeded by other referenced guideline.

Table 14

Summary of Groundwater Analytical Results - Metals/Metalloids
Maunsell/National Biodiesel Site Investigation (2008)

Location	IHMW1			IHMW10		IHMW2		IHMW3		IHMW4		IHMW5				IHMW6		IHMW7			IHMW8	
Sample ID	IHMW1	IHMW1	IHMW1CHK	IHMW10	IHMW10	IHMW2	IHMW2	IHMW3	IHMW3	IHMW4	IHMW4	IHMW5	QC23	QC24	IHMW5	IHMW6	IHMW6	IHMW7	IHMW7CHK	IHMW7	IHMW8	IHMW8
Date Sampled	27-Nov-03	9-Dec-04	9-Dec-04	27-Nov-03	9-Dec-04	27-Nov-03	9-Dec-04	27-Nov-03	9-Dec-04	27-Nov-03	9-Dec-04	27-Nov-03	27-Nov-03	27-Nov-03	9-Dec-04	27-Nov-03	9-Dec-04	27-Nov-03	27-Nov-03	7-Dec-04	27-Nov-03	7-Dec-04
QAQC Sample Type	PS	PS	LD	PS	PS	PS	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS	LD	PS	PS	PS
Analyte	**LOR**	**Units**	**ANZECC 2000**	NSW EPA																		
Metals																						
Arsenic	0.001	mg/L			<0.01	<0.01	<0.01	<0.001	<0.001	<0.01	<0.01	<0.001	<0.001	0.001	<0.001	0.003	0.003	<0.001	0.003	<0.01	<0.01	<0.001	<0.001	0.001	<0.01	0.01
Cadmium	0.001	mg/L	0.0055		<0.001	<0.0001	<0.0001	<0.001	<0.0001	<0.001	<0.0001	<0.001	0.0001	<0.001	<0.0001	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.0001	<0.001	<0.001	<0.0001	<0.001	<0.0001
Chromium	0.001	mg/L	0.0274		<0.001	<0.01	<0.01	0.004	<0.001	0.005	<0.01	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.01	0.015	0.016	0.023	<0.001	<0.01
Hexavalent Chromium	0.01	mg/L	0.0044																							
Copper	0.001	mg/L	0.0013		<0.02	<0.02	<0.02	**0.002**	0.001	<0.02	<0.02	**0.002**	**0.003**	**0.002**	**0.003**	**0.004**	**0.004**	<0.001	**0.002**	**0.03**	<0.02	**0.003**	**0.002**	**0.005**	<0.02	**0.03**
Lead	0.001	mg/L	0.0044	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	**0.012**	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001
Mercury	0.0001	mg/L	0.0004		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.01	mg/L	0.07		<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	0.002	<0.01	<0.001	<0.01	<0.01	0.004	<0.001	<0.01	<0.01	<0.01	<0.01	0.004	<0.01	**0.017**
Zinc	0.005	mg/L	0.015		**0.016**	<0.05	<0.05	**0.043**	0.006	**0.092**	<0.05	**0.02**	**0.047**	0.005	0.005	0.013	0.014	0.003	<0.005	**0.044**	<0.05	0.009	0.008	0.009	0.014	<0.05

INVESTIGATION LEVELS

Greater than ANZECC 2000 Protection of Aquatic Ecosystems Marine Water 95% Protection

A: NSW EPA Guidelines for Assessing Service Station Sites Protection of Aquatic Ecosystems

LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004
2004 Data taken from URS June 2005
2005 Data taken from URS Jan 2006

Table 14

Summary of Groundwater Analytical Results - Metals/Metalloids
Maunsell/National Biodiesel Site Investigation (2008)

Location				IHMW9			MW13					MW16		MW17					MW22			
Sample ID				IHMW9	IHMW9	MW11	MW12	MW13	MW13CHK	MW14	MW15	MW16	MW16CHK	MW17	MW17CHK	MW19	MW20	MW21	MW22	MW22CHK	QC10	QC10CHK
Date Sampled				27-Nov-03	7-Dec-04	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05
QAQC Sample Type				PS	PS	PS	PS	PS	LD	PS	PS	PS	LD	PS	LD	PS	PS	PS	PS	LD	FD	LD
Analyte	**LOR**	**Units**	**ANZECC 2000**	NSW EPA																		
Metals																						
Arsenic	0.001	mg/L			0.002	0.002	0.002	<0.001	0.004	-	0.005	0.002	0.002	<0.001	<0.001	-	<0.001	0.003	0.002	0.006	-	0.007	-
Cadmium	0.001	mg/L	0.0055		<0.001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	-
Chromium	0.001	mg/L	0.0274		<0.001	0.002	0.001	0.016	0.001	-	0.002	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	-
Hexavalent Chromium	0.01	mg/L	0.0044				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
Copper	0.001	mg/L	0.0013		**0.002**	**0.003**	**0.004**	**0.002**	**0.004**	-	<0.001	0.001	**0.005**	**0.004**	<0.001	-	<0.001	<0.001	**0.006**	**0.003**	-	**0.003**	-
Lead	0.001	mg/L	0.0044	0.005	<0.001	<0.001	<0.001	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	-
Mercury	0.0001	mg/L	0.0004		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.01	mg/L	0.07		<0.01	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	0.005	mg/L	0.015		**0.018**	**0.026**	0.005	0.01	**0.017**	-	<0.005	**0.017**	0.01	0.009	<0.005	-	**0.035**	0.015	**0.022**	<0.005	-	<0.005	-

INVESTIGATION LEVELS

Greater than ANZECC 2000 Protection of Aquatic Ecosystems Marine Water 95% Protection

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LEGEND
NA - Not Analyzed
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FT - Field Triplicate
2003 Data taken from URS June 2004
2004 Data taken from URS June 2005
2005 Data taken from URS Jan 2006

Table 15
Summary of Groundwater Analytical Results - TPH and BTEX
Maunsell/National Biodiesel Site Investigation (2008)

						MW16						MW22	
Sample ID	MW11	MW12	MW13	MW14	MW15	MW16	MW16CHK	MW17	MW19	MW20	MW21	MW22	QC10
Date Sampled	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05
QAQC Sample Type	PS	PS	PS	PS	PS	PS	LD	PS	PS	PS	PS	PS	FD
Analyte													
Total Petroleum Hydrocarbons													
C6-C9 fraction	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	<20	<20
C10-C14 fraction	<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50	<50
C15-C28 fraction	100	<100	<100	<100	<100	400	-	<100	<100	<100	300	<100	<100
C29-C36 fraction	<50	<50	<50	<50	<50	200	-	<50	<50	<50	150	<50	<50
Total C10-C36 fraction	100	-	-	-	-	600	-	-	-	-	450	-	-
BTEX Compounds													
Benzene	<1	<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	<1
Toluene	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2	<2
Ethylbenzene	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2	<2
m&p-Xylene	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2	<2
o-Xylene	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2	<2
Total Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-

Analyte	LOR	Units	ANZECC 2000	NSW EPA
Total Petroleum Hydrocarbons				
C6-C9 fraction	20	µg/L		
C10-C14 fraction	50	µg/L		
C15-C28 fraction	100	µg/L		
C29-C36 fraction	50	µg/L		
Total C10-C36 fraction	calculated	µg/L		
BTEX Compounds				
Benzene	1	µg/L	700	300
Toluene	2	µg/L		
Ethylbenzene	2	µg/L		
m&p-Xylene	2	µg/L		
o-Xylene	2	µg/L		
Total Xylene	calculated	µg/L		380

Investigation Levels

Greater than ANZECC 2000 Protection of Aquatic Ecosystems Marine Water 95% Protection

NSW EPA Guidelines for Assessing Service Station Sites Protection of Aquatic Ecosystems

LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2005 Data taken from URS Jan 2006

Table 16
Summary of Groundwater Analytical Results - Phenols
Maunsell/National Biodiesel Site Investigation (2008)

Sample ID													
												MW22	
Date Sampled	MW11	MW12	MW13	MW14	MW15	MW16	MW17	MW19	MW20	MW21	MW22	QC10
	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05
Sample Type	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	FD
Analyte	**LOR**	**Units**	**ANZECC 2000**	**NSW EPA**									
Phenolic Compounds													
2,4,5-Trichlorophenol	0.3	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol	0.3	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2,4-Dichlorophenol	0.3	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2,4-Dimethylphenol	0.5	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2,6-Dichlorophenol	0.3	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Chlorophenol	0.3	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Methylphenol	0.5	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Nitrophenol	0.5	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
3- & 4-Methylphenol	0.5	µg/L			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
4-Chloro-3-Methylphenol	0.3	µg/L			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Pentachlorophenol	0.3	µg/L	22		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Phenol	0.5	µg/L	400	50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Investigation Levels
Greater than ANZECC 2000 Protection of Aquatic Ecosystems Marine Water 95% Protection
NSW EPA Guidelines for Assessing Service Station Sites Protection of Aquatic Ecosystems

LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2005 Data taken from URS Jan 2006

Table 17

Summary of Ground Water Analytical Results - PAHs

Maunsell/National Biodiesel Site Investigation (2008)

Location	IHMW1	IHMW10				IHMW5													
Sample ID	IHMW1	IHMW10	IHMW2	IHMW3	IHMW4	IHMW5	QC23	QC24	IHMW6	IHMW7	IHMW8	IHMW9	MW11	MW12	MW13	MW14	MW15	MW16	MW17	MW19
Date Sampled	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	27-Nov-03	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05
QAQC Sample Type							FD	FT					PS	PS	PS	PS	PS	PS	PS	PS
Analyte	**LOR**	**Units**	**ANZECC 2000**	NSW EPA																
PAHs																				
Acenaphthene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1
Acenaphthylene	2	ug/L			<2	<2	2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	2.2	<1
Anthracene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	2.4	<1
Benzo(a)anthracene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<0.5	9.4	<0.5	<0.5
Benzo(b)fluoranthene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<1	<1	<1	<1	<1	11.8	<1	<1
Benzo(g,h,i)perylene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	7	<1	<1
Benzo(k)fluoranthene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<1	<1	<1	<1	<1	6.5	<1	<1
Chrysene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	8.6	<1	<1
Dibenzo(a,h)anthracene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	<2	<2	<1	<1	<1	<1	<1	1.7	<1	<1
Fluoranthene	2	ug/L			<2	<2	3	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	21.9	<1	<1
Fluorene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	1.3	<1	<1
Indeno(1,2,3-cd)pyrene	2	ug/L			<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	6.4	<1	<1
Naphthalene	2	ug/L	70		<2	<2	36	<2	<2	<2	<2	<1	<2	<2	<2	<2	4.8	<1	1.2	<1	<1	2.6	<1	2.4
Phenanthrene	2	ug/L			<2	<2	6	<2	<2	<2	<2	<1	<2	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	2	ug/L			<2	<2	2	<2	<2	<2	<2	<1	<2	<2	<2	<2	<1	<1	<1	<1	<1	16.4	<1	<1
Total PAHs		ug/L		3			**49**										**4.8**	-	1.2	-	-	**98.2**	-	2.4

Investigation Levels

Greater than ANZECC 2000 Protection of Aquatic Ecosystems Marine Water 95% Protection

NSW EPA Guidelines for Assessing Service Station Sites Protection of Aquatic Ecosystems

LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Table 17

Summary of Ground Water Analytical Results - PAHs
Maunsell/National Biodiesel Site Investigation (2008)

Location			MW22	
Sample ID	MW20	MW21	MW22	QC10
Date Sampled	30-Nov-05	30-Nov-05	30-Nov-05	30-Nov-05
QAQC Sample Type	PS	PS	PS	FD

Analyte	**LOR**	**Units**	**ANZECC 2000**	NSW EPA				
PAHs								
Acenaphthene	2	ug/L			<1	<1	<1	<1
Acenaphthylene	2	ug/L			<1	<1	<1	<1
Anthracene	2	ug/L			<1	<1	<1	<1
Benzo(a)anthracene	2	ug/L			NA	NA	NA	NA
Benzo(a)pyrene	2	ug/L			<0.5	1.9	1.2	0.7
Benzo(b)fluoranthene	2	ug/L			<1	2.6	1.5	<1
Benzo(g,h,i)perylene	2	ug/L			<1	1.3	<1	<1
Benzo(k)fluoranthene	2	ug/L			<1	<1	<1	<1
Chrysene	2	ug/L			<1	1.8	1.2	<1
Dibenzo(a,h)anthracene	2	ug/L			<1	<1	<1	<1
Fluoranthene	2	ug/L			<1	3.6	2.3	1.3
Fluorene	2	ug/L			<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene	2	ug/L			<1	1.2	<1	<1
Naphthalene	2	ug/L	70		<1	4.9	<1	<1
Phenanthrene	2	ug/L			NA	NA	NA	NA
Pyrene	2	ug/L			<1	3	2.3	1.3
Total PAHs		ug/L		3	-	**20.3**	**8.5**	**3.3**

Investigation Levels

Greater than ANZECC 2000 Protection of Aquatic Ecosystems Marine Water 95% Protection

NSW EPA Guidelines for Assessing Service Station Sites Protection of Aquatic Ecosystems

LEGEND
NA - Not Analyzed
PS - Primary Sample
FD - Field Duplicate
FT - Field Triplicate
2003 Data taken from URS June 2004
2005 Data taken from URS Jan 2006

Figures

INNER HARBOR

AAT

AAT

ROAD

THUMB

PT LOT 20 DP1046295

① GRAINCORP GRAIN TERMINAL

③ OLD

MORTON WAY

⑤

GARRANGATTY WATERWAY

⑥

③ NEW

CARGO ASSEMBLY AREA

NO.	PT LOT	D.P.	PKPC APPROXIMATE AREAS (Ha)
1	2001	1030233	2.27
3(NEW)	2	1125445	1.8
5	123	1128379	3.11
6	101	1120801	0.43

LOT 301 AVAILABLE LEASE AREA EXCLUDES ROADS & SERVICES

100 0 100 200 300 400 Metres

PKPC BDY

PROPOSED BDY (APPROX)

THIS PLAN IS A COMPILATION ONLY.
ALL STRUCTURES AND BOUNDARIES ARE SUBJECT TO SURVEY.
CO-ORDINATE SYSTEM MGA

NCPL

SCALE 1:4000 A3

DATE 29/3/12

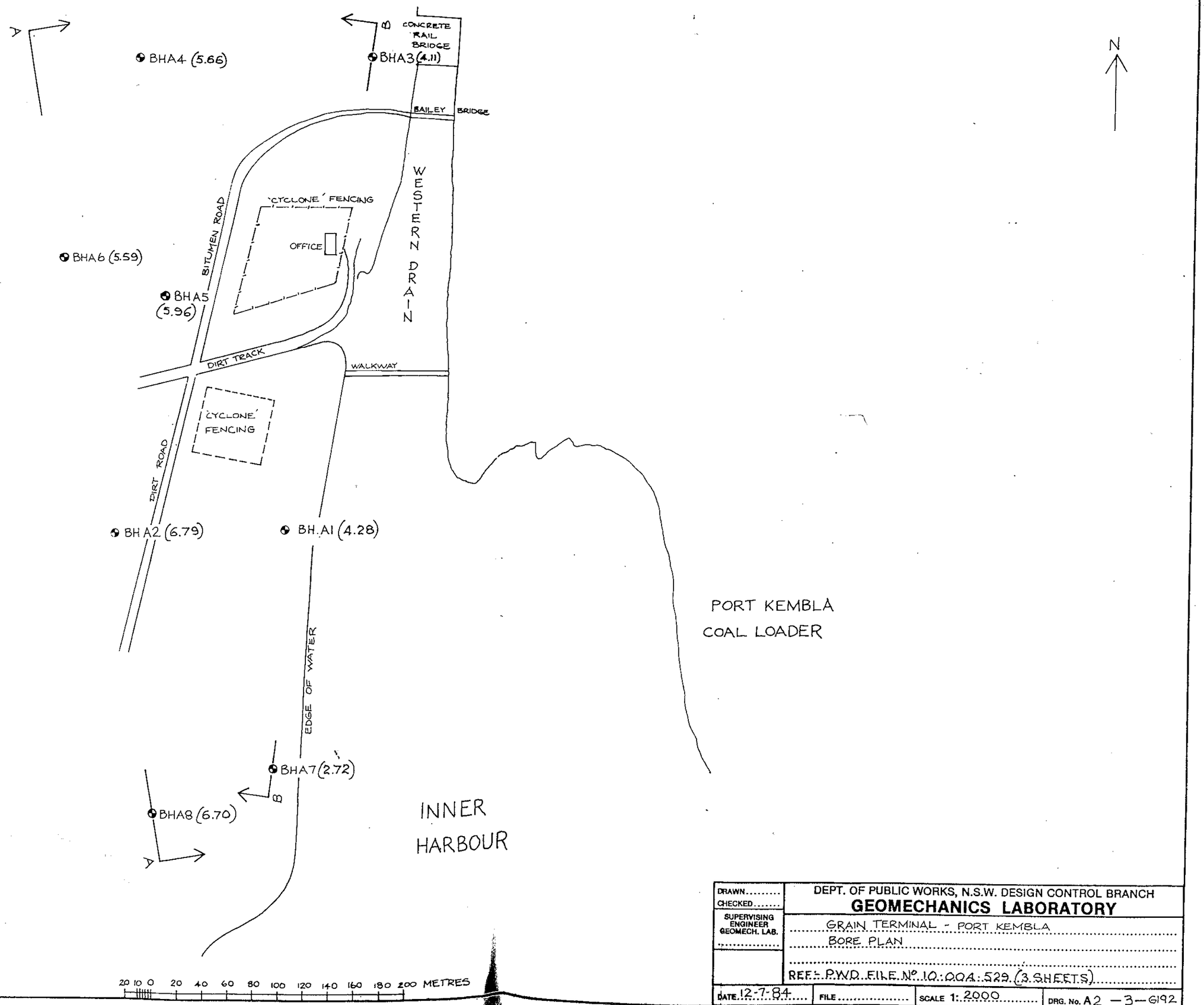
PORT KEMBLA PORT CORPORATION
PROPOSED BIO DIESEL PROJECT
LAND AVAILABILITY

NCPL DRG No.

10649/2

Borehole Locations 1983

Appendix A



DRAWN..... CHECKED..... SUPERVISING ENGINEER GEOMECH. LAB.	DEPT. OF PUBLIC WORKS, N.S.W. DESIGN CONTROL BRANCH **GEOMECHANICS LABORATORY** GRAIN TERMINAL - PORT KEMBLA BORE PLAN REF:- P.W.D. FILE N°. 10:004:529. (3 SHEETS)
DATE 12-7-84	FILE ..... SCALE 1:2000 DRG. No. A2 – 3 – 6192

Aerial Photographs

Appendix B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Historical Bore Logs

Appendix C

URS

MONITORING WELL IHMW1

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

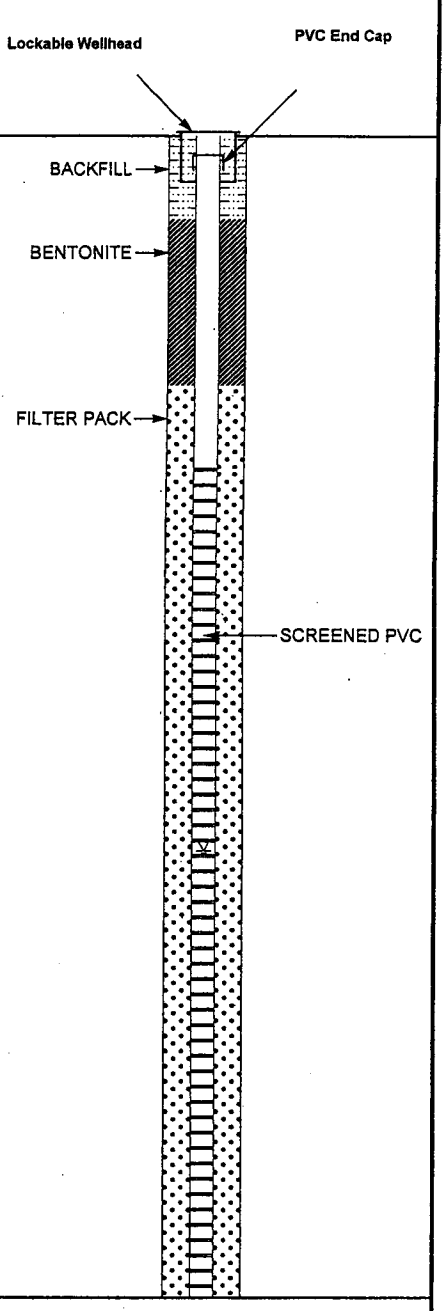
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: GB	Bore Size: 150 mm	Relative Level: mRL	Drill Type: Edson 3000
Checked By:	Total Depth: 7.00 m	Coordinates: mN	Drill Model:
Date Started: 12-11-03	Casing Size: 50 mm	mE	
Date Finished: 12-11-03		Permit No:	Drill Fluid: NA

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				FILL: slag; gravel.		0	
G	1.2	IHMW1_0.4-0.5		Silty CLAY: brown mottling grey; firm; moderate plasticity; moist; traces of shell, gravel and sand lenses.			M
	0.2	IHMW1_0.9-1.0				1	
	2.7	IHMW1_1.9-2.0		As above: increasing sand content.		2	
	4.7	IHMW1_3.0-3.1		Sandy CLAY: firm; nonplastic; firm; moist; with sand, shells, and organic matter..		3	M
	1.2	IHMW1_3.9-4.0		Sandy CLAY: black / dark brown; firm; moist/wet; traces of marine matter.		4	W
	0.3	IHMW1_4.9-5.0 QC5, QC6		GRAVEL: black; wet; some clay content.		5	W
				Silty CLAY: with some sand content; brown mottling grey; soft; moderate to high plasticity; traces of marine and organic matter.		6	
	0.5	IHMW1_6.9-7.0				7	
				EOH@7.0m. End of investigation.			

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL IHMW2

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

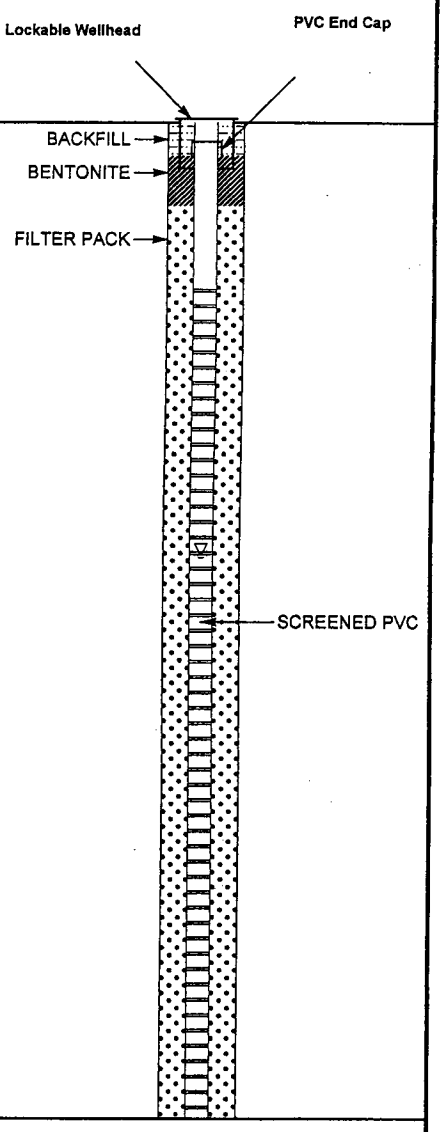
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.4	IHMW2_0.3-0.4		FILL: black; slag; gravel; soil; wet; rock pieces.		0	W
	0.6	IHMW2_0.9-1.0				1	
	1.9	IHMW2_1.9-2.0		CLAY: dark grey; silty; loose; soft; moderate to high plasticity; wet.		2	W
	0	IHMW2_2.9-3.0		As above.		3	
	0	IHMW2_3.9-4.0		As above.		4	
	0	IHMW2_4.9-5.0		Silty CLAY: black / grey; soft; high plasticity; saturated.		5	W
	0.5	IHMW2_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW3

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

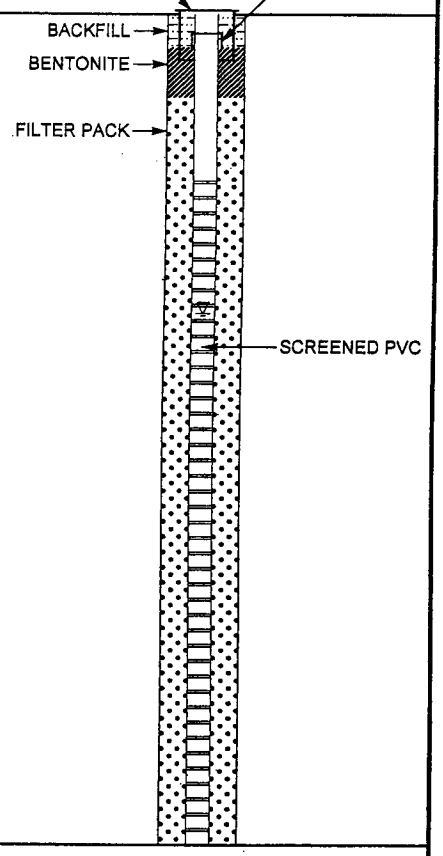
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **5.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **11-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **11-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	4.3	IHMW3_0.4-0.5		FILL: Gravel; slag; sand; pieces of rock; some moisture.		0	M
	2.1	IHMW3_0.9-1.0		As above: grey; dry.		1	D
	1.3	IHMW3_1.9-2.0		FILL: gravel; slag; sand; saturated.		2	W
	1.6	IHMW3_2.9-3.0		Silty CLAY: grey / black; organic; saturated; traces of marine matter.		3	W
	2.3	IHMW3_3.9-4.0 / QC1, QC2		SAND: grey; some silty clay; saturated; soft; some shell pieces.		4	W
	0.8	IHMW3_4.9-5.0		EOH@5.0m. End of investigation.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW4

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **11-11-03**
Date Finished: **11-11-03**

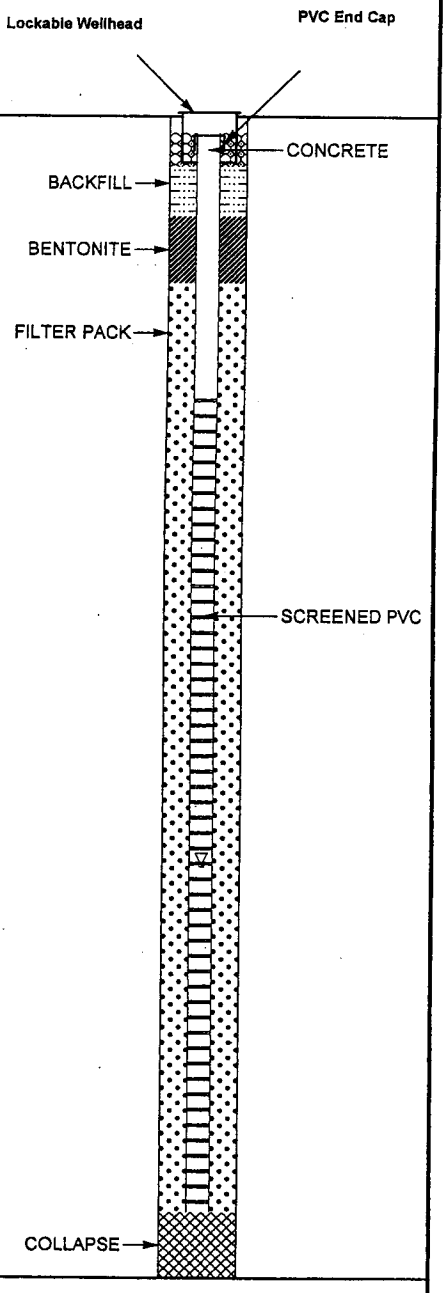
Bore Size: **150 mm**
Total Depth: **7.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	2.2	IHMW4_0.4-0.5		FILL: slag; grey; some pieces of rock and gravel; some sand.		0	
	5.7	IHMW4_0.9-1.0		CLAY: brown; moist; mottling grey; organic odour; moderate to high plasticity; soft.		1	M
	6.5	IHMW4_1.9-2.0		Sandy CLAY: brown; moist; moderate plasticity; soft.		2	M
	0	IHMW4_2.9-3.0		As above with some increasing sand content.		3	
	2.1	IHMW4_3.9-4.0		SAND: grey; loose; moist.		4	M
	3.7	IHMW4_4.9-5.0		SAND: grey; saturated; traces of sandy clay. As above.		5	W
	2.7	IHMW4_5.9-6.0		SAND: brown; saturated with sandy clay; traces of marine matter.		6	W
	2.8	IHMW4_6.9-7.0		As above. EOH@7.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW5

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

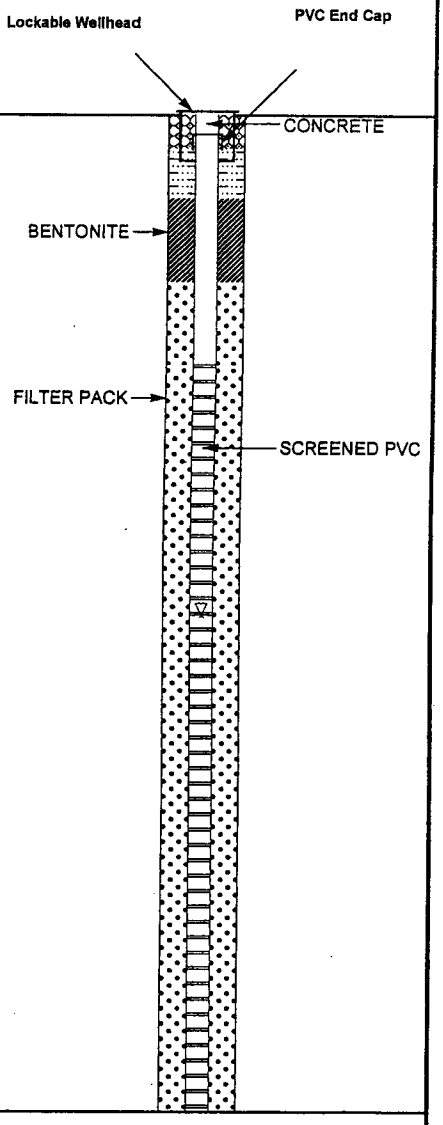
Location:

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **6.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **17-11-03**	Casing Size: **mm**	**mE**	Drill Fluid: **NA**
Date Finished: **17-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	7.7	IHMW5_0.3-0.4/ QC13, QC14		FILL: grey / blue; slag; gravel; sand; broken rock pieces.		0	
	26.1	IHMW5_1.9-2.0		FILL: clay; grey / black; gravel and slag; moist.		2	M
	28.2	IHMW5_2.9-3.0		FILL: grey / black; gravel; slag; rock fragments; clay; wet.		3	W
				Silty CLAY: grey; soft; moderate plasticity; traces of sand.		4	
	17.8	IHMW5_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW6

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

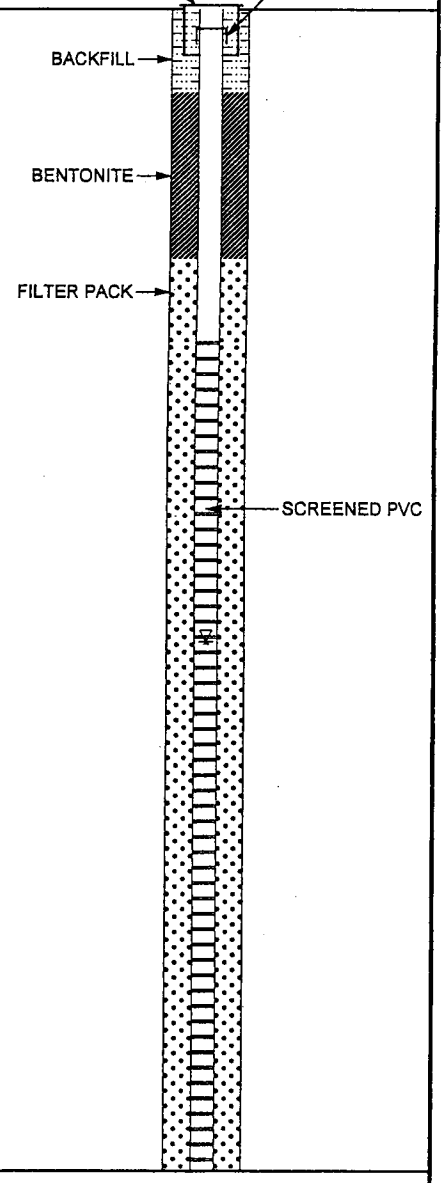
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **7.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **13-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **13-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.7	IHMW6_0.3-0.4		FILL: gravel; slag; sand.		0	
	1.7	IHMW6_0.9-1.0		CLAY: brown; mottling grey; firm; moderate plasticity; moist.		1	M
	1.1	IHMW6_1.9-2.0				2	
	1.7	IHMW6_2.9-3.0		Silty CLAY: brown; firm; moderate to high plasticity; moist.		3	M
	0.5	IHMW6_3.9-4.0		Silty CLAY: brown; soft; moderate to high plasticity; wet.		4	W
	2.8	IHMW6_4.9-5.0 QC7, QC8		Silty CLAY: brown; soft; high plasticity; very sticky; wet.		5	W
	0.2	IHMW6_5.9-6.0		As above: dark grey and saturated.		6	W
	1.7	IHMW6_6.9-7.0		Silty CLAY: dark grey; some sand; high plasticity; soft.		7	

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL IHMW7

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

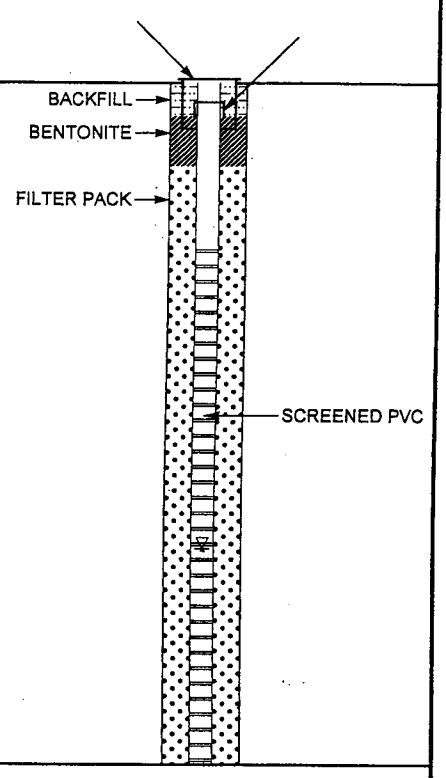
Bore Size: **150 mm**
Total Depth: **4.10 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.9	IHMW7_0.4-0.5		FILL: slag; gravel sand; moist.		0	M
	1.7	IHMW7_0.9-1.0 / QC3, QC4				1	
				FILL: clay reworked with some slag and gravel.			
	0.8	IHMW7_1.9-2.0				2	
	1.9	IHMW7_2.9-3.0		FILL: black; gravel; slag; clay; wet.		3	W
	2.1	IHMW7_3.9-4.0				4	
				EOH@4.1. Refusal.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL IHMW8

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Location:

Logged By: **GB**
Checked By:
Date Started: **17-11-03**
Date Finished: **17-11-03**

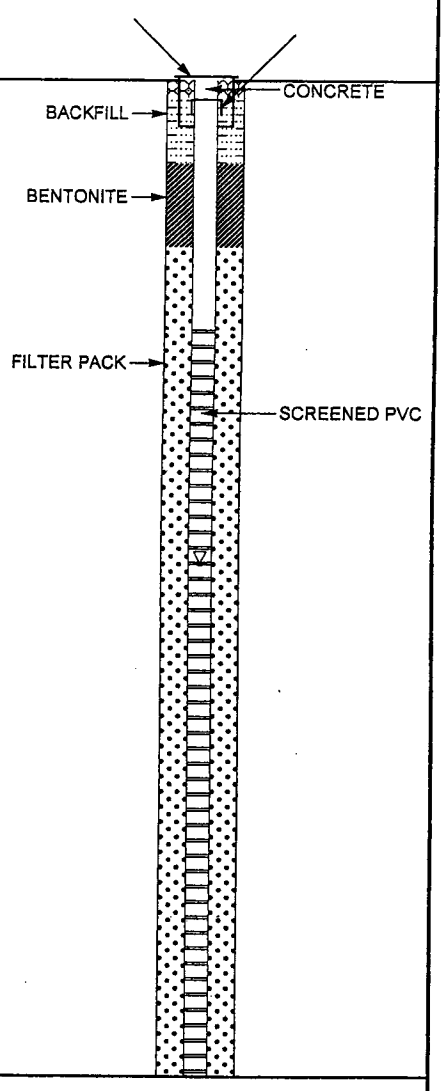
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	6.4	IHMW8_0.3-0.4		FILL: clay; slag; sand; gravel.		0	
				As above.		1	
	17.6	IHMW8_1.9-2.0		Silty CLAY: grey / black; firm; moderate plasticity; moist.		2	M
	17.1	IHMW8_2.9-3.0				3	
						4	
	14.5	IHMW8_4.9-5.0 QC15, QC16		Silty CLAY: black; grey; soft; high plasticity; wet.		5	W
				EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 28-01-04

URS

MONITORING WELL IHMW9

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Project No.: **52735-002**

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Logged By: **GB**
Checked By:
Date Started: **11-11-03**
Date Finished: **11-11-03**

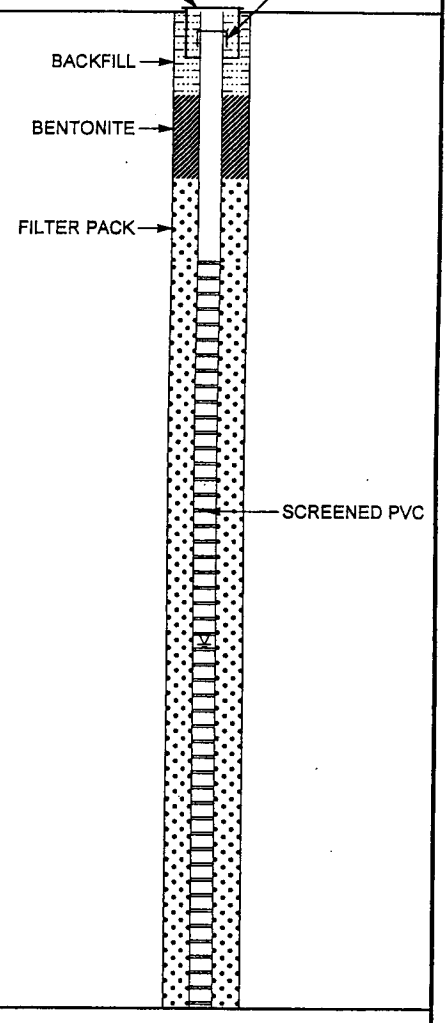
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	1.4	IHMW9_0.4-0.5		FILL: slag; black; gravel; sand; rocks; dry.		0	D
	0.2	IHMW9_0.9-1.0				1	
	1.2	IHMW9_1.9-2.0		SAND: brown; loose; moist; traces of marine matter.		2	M
	0.7	IHMW9_2.9-3.0				3	
	1.5	IHMW9_3.9-4.0		SAND: grey; loost; wet; soft; traces of marine matter.		4	W
	1.9	IHMW9_4.9-5.0		As above: grey / black; saturated; soft; loose.		5	
	2.6	IHMW9_5.9-6.0		CLAY: dark grey; silty; loose; soft; moderate to high plasticity; wet.		6	W
				EOH@6.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW10

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

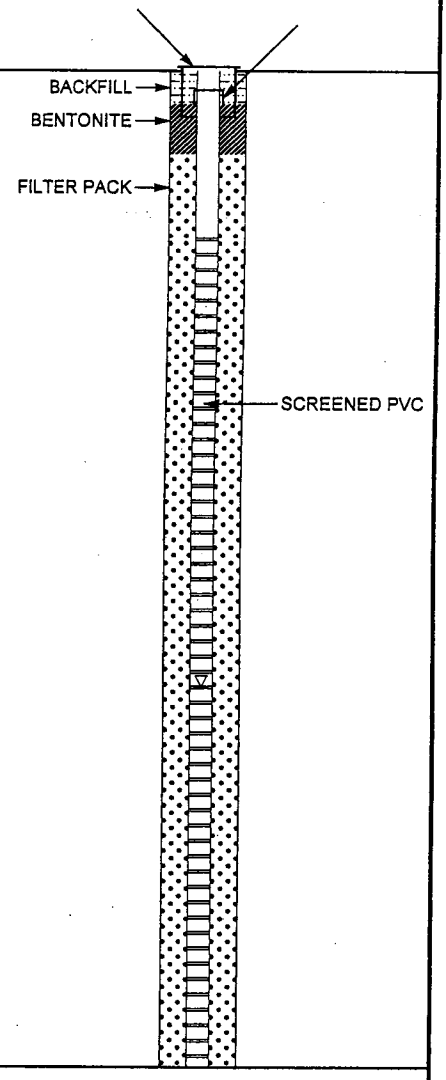
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	2.4	IHMW10_0.3-0.4		FILL: grey; slag; gravel; sand; dry.		0	D
	1.5	IHMW10_0.9-1.0				1	
				SAND: brown; loose; moist.			M
	1.5	IHMW10_1.9-2.0				2	
	1.1	IHMW10_2.9-3.0				3	
	1.9	IHMW10_3.9-4.0		SAND: grey; loose; wet; traces of marine matter.		4	W
	2.2	IHMW10_4.9-5.0		SAND: grey; loose; saturated; marine matter.		5	
	3.2	IHMW10_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



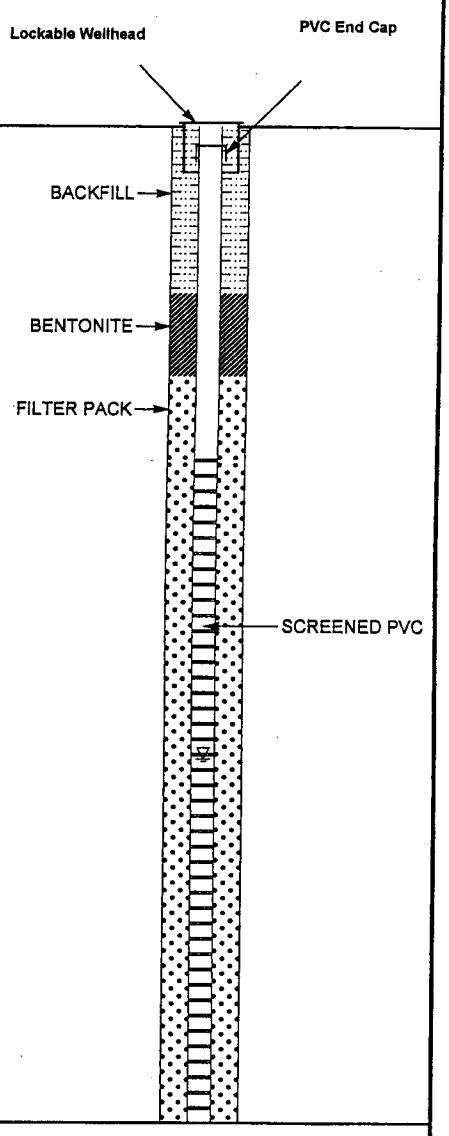
WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

MONITORING WELL OHMW21

URS Australia Pty. Ltd. Level 3, 116 Miller Street, North Sydney	Phone 02 8925 5500 Fax 02 8925 5555	Project Reference:	Client: **Port Kembla Ports**
Drilling Contractor: **Terratest, Engineering Exploration**		Project No.: **52735-002**	Location:
Logged By: **GB** Checked By: Date Started: **13-11-03** Date Finished: **13-11-03**	Bore Size: **150 mm** Total Depth: **6.00 m** Casing Size: **mm**	Relative Level: **mRL** Coordinates: **mN** **mE** Permit No:	Drill Type: **Edson 3000** Drill Model: Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.3	OHMW21_0.3-0.4		FILL: slag; reworked clay; rocks; gravel; sand.		0	
				SAND		1	
				Sandy CLAY: matural; moderate plasticity; moist.		2	M
				SAND: orange; some yellow; loose; moist.			M
	0.5	OHMW21_2.9-3.0				3	
				SAND: grey / brown; saturated; shells.		4	W
						5	
	0.2	OHMW21_5.9-6.0				6	
				EOH@6.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL OHMW22

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **13-11-03**
Date Finished: **13-11-03**

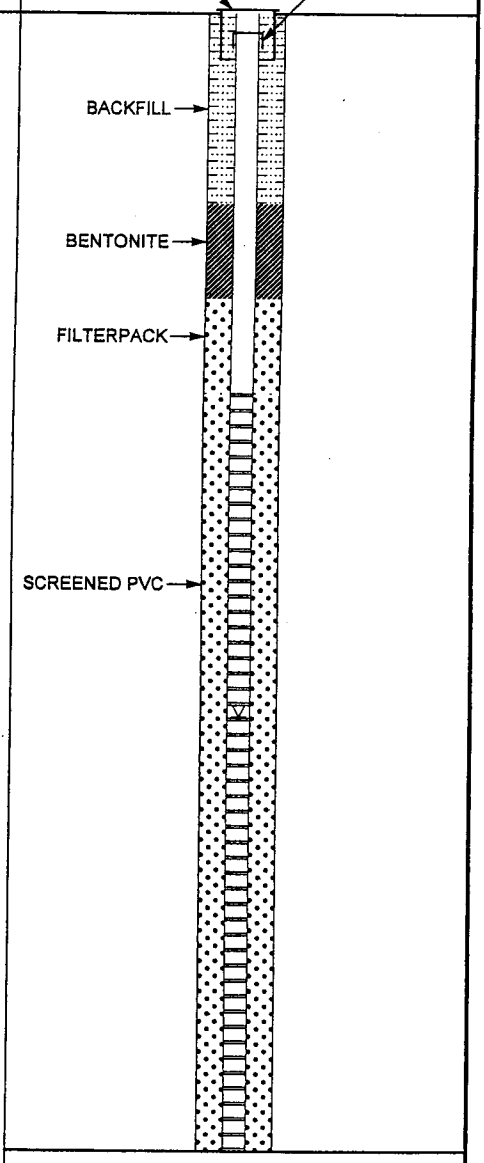
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				FILL: gravel; black; rocks; slag; sand; soil; dry.		0	D
	2.2	OHMW22_0.3-0.4 QC9, QC10				1	
				CLAY: brown; firm; moderate plasticity; moist.		2	M
				SAND: yellow; loose; moist.		3	M
	2.2	OHMW22_2.9-3.0				4	
				SAND: grey; shell; loose; saturated.		5	W
	.9	OHMW22_5.9-6.0				6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 04-02-04

MONITORING WELL OHMW23

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

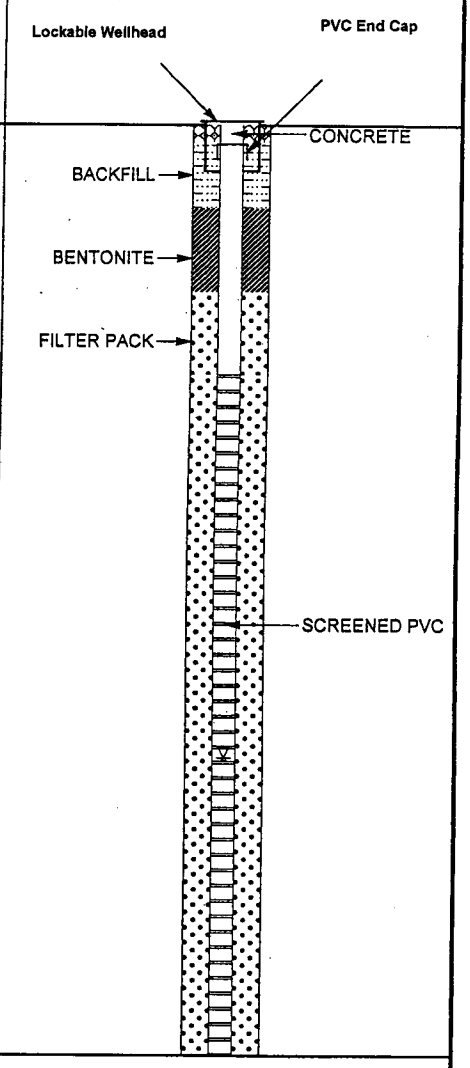
Bore Size: **150 mm**
Total Depth: **5.60 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	1.1	OHMW23_0.3-0.4		FILL: slag; gravel; sand; broken rock pieces.		0	
						1	
						2	
	1.4	OHMW23_2.9-3.0		SAND: orange; loose; moist.		3	M
						4	
				SAND: grey; saturated; shells.		5	W
	0.8	OHMW23_5.5-5.6		EOH@5.6m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW24

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Project No.: **52735-002**

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Logged By: **GB**
Checked By:
Date Started: **13-11-03**
Date Finished: **13-11-03**

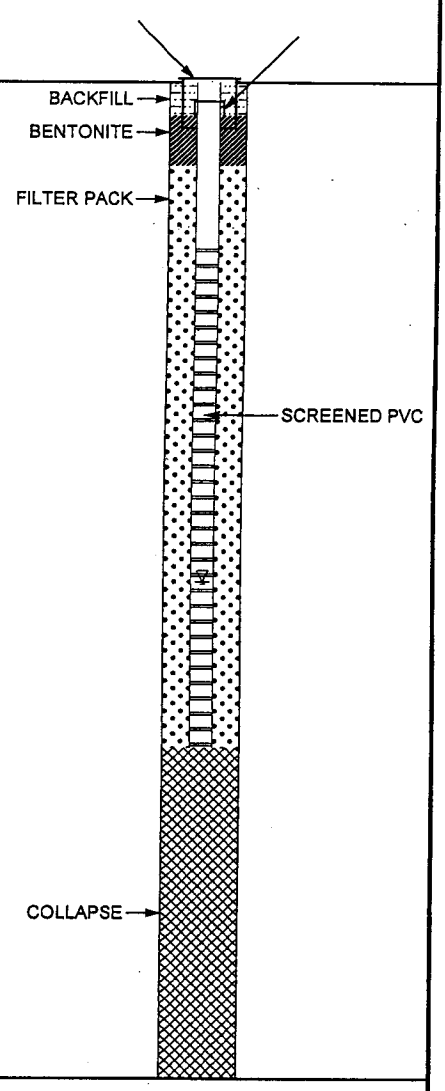
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.7	OHMW24_0.3-0.4		FILL: black; dry; gravel; slag.		0	D
	1.1	OHMW24_0.9-1.0				1	
				SAND: loose; moist.		2	
				Sandy CLAY: brown; soft; moderate plasticity; moist.			M
	0.5	OHMW24_2.9-3.0		Gravelly CLAY: black; firm; non plastic; moist.		3	M
				SAND: brown; loose; saturated; shells.			W
						4	
						5	
	1.6	OHMW24_5.9-6.0				6	
				EOH@6.0m. End of investigation.			
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW26

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

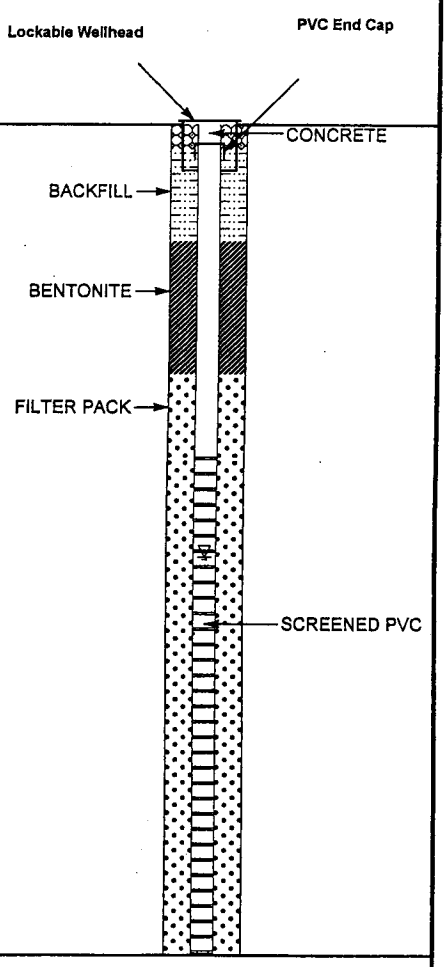
Bore Size: **150 mm**
Total Depth: **5.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.5	OHMW26_0.4-0.5		FILL: brown; slag; gravel; sand; rock fragments; traces of clay; moist.		0	M
				FILL: with increasing clay content.		1	
				Sandy CLAY: moderate plasticity; moist.		2	M
				SAND: brown; loose; wet.			W
	1.1	OHMW26_2.9-3.0				3	
						4	
	0.4	OHMW26_4.9-5.0				5	
				EOH@5.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW27

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

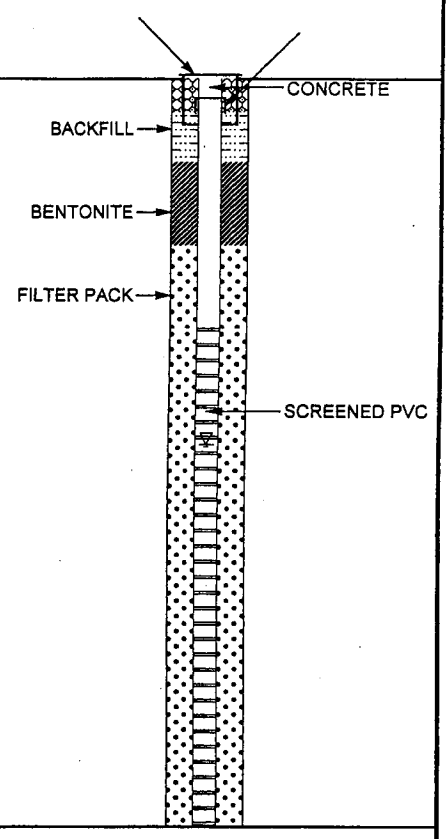
Bore Size: **150 mm**
Total Depth: **4.50 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.7	OHMW27_0.4-0.5		FILL: slag; gravel; rock fragments; moist.		0	M
				SAND: orange; loose; moist.		1	M
						2	
	0.2	OHMW27_2.9-3.0		SAND: orange; brown; saturated.		3	W
						4	
				EOH@4.5m. End of investigation.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

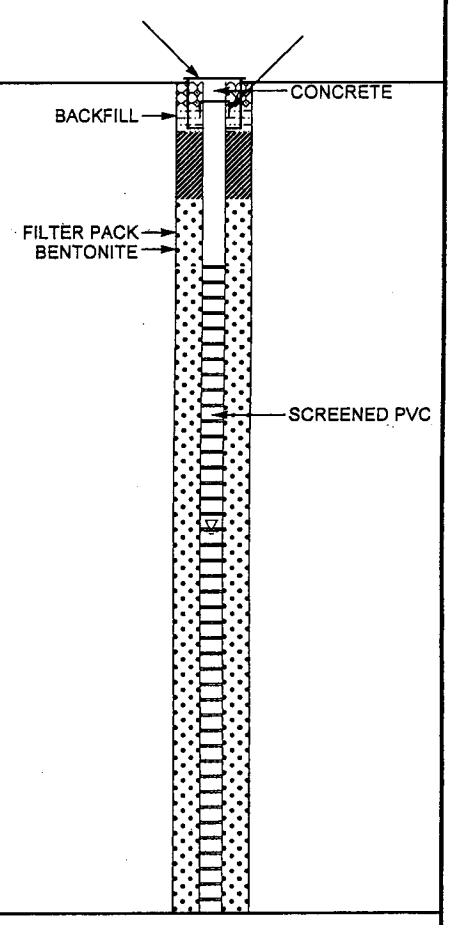
MONITORING WELL OHMW28

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Drilling Contractor: **Terratest, Engineering Exploration**		Project Reference:	Client: **Port Kembla Ports**
		Project No.: **52735-002**	Location:
Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **5.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **14-11-03**	Casing Size: **mm**	**mE**	Drill Fluid: **NA**
Date Finished: **14-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	6.1	OHMW28_0.4-0.5/ QC11, QC12		FILL: sand; gravel; slag; rock fragments; dry.		0	D
						1	
				SAND: brown; loose; moist.			M
						2	
	22.5	OHMW28_2.9-3.0				3	
				SAND: brown; loose; saturated; shells.			W
						4	
	7.9	OHMW28_4.9-5.0				5	
				EOH@5.0m. End of investigation.			
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW29

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **17-11-03**
Date Finished: **17-11-03**

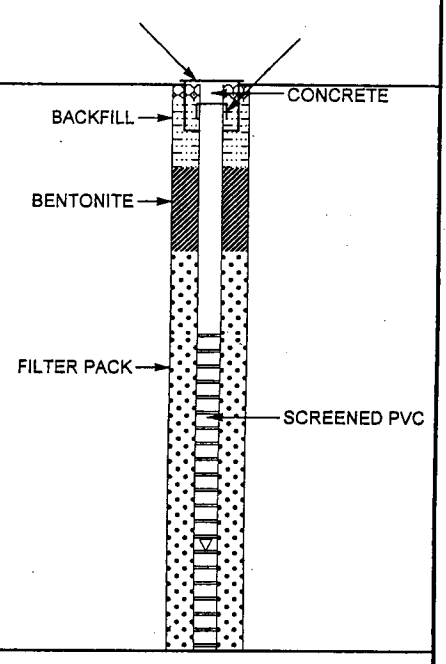
Bore Size: **150 mm**
Total Depth: **3.40 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	40.2	OHMW29_0.3-0.4		FILL: topsoil; sand; gravel; rock figments.		0	
				FILL: large rock fragments; tennis ball size.		1	
						2	
				Silty CLAY: brown; soft; moderate plasticity; wet.		3	W
	5.2	OHMW29_2.9-3.0					
				EOH@3.4m. Refusal on rock.		4	
						5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 28-01-04

URS

MONITORING WELL OHMW30

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

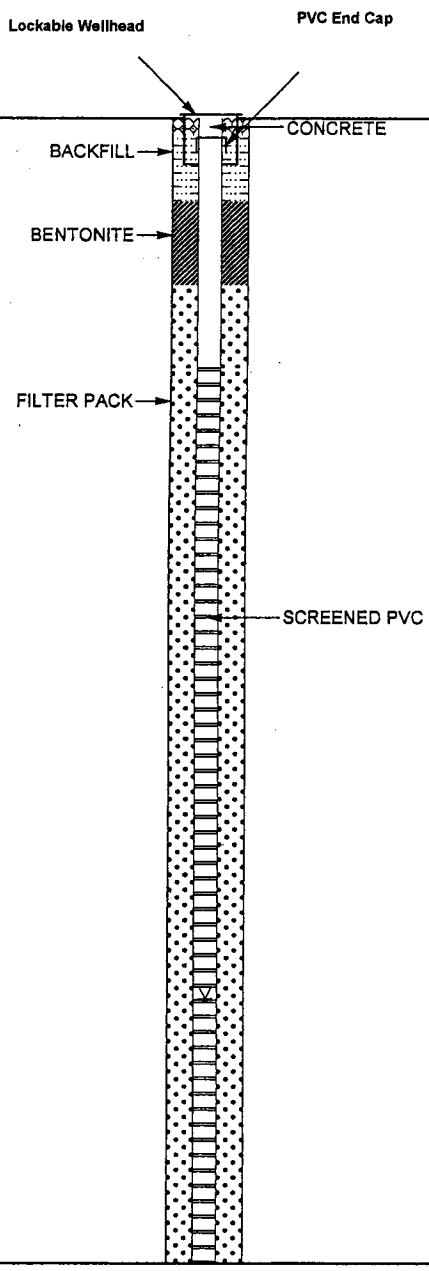
Bore Size: **150 mm**
Total Depth: **6.90 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN** **mE**
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)
	0	OHMW30_0.3-0.4		FILL: gravel; rocks; slag (grey dust); sand.		0
				FILL: clay; black / brown; low plasticity; moist; gravels.		2
	0.1	OHMW30_2.9-3.0		FILL: Black, moist, wood, possible railway sleepers, old automobil tyres.		3
				SAND: brown; loose; wet.		4
				SAND: brown; saturated; loose.		6
	1.1	OHMW30_6.4-6.5				
				EOH@6.9m. End of investigation.		7

WELL CONSTRUCTION DETAILS



WELL_MELB LOGS.GPJ WCC_AUS.GDT 04-02-04

MONITORING WELL MW11

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

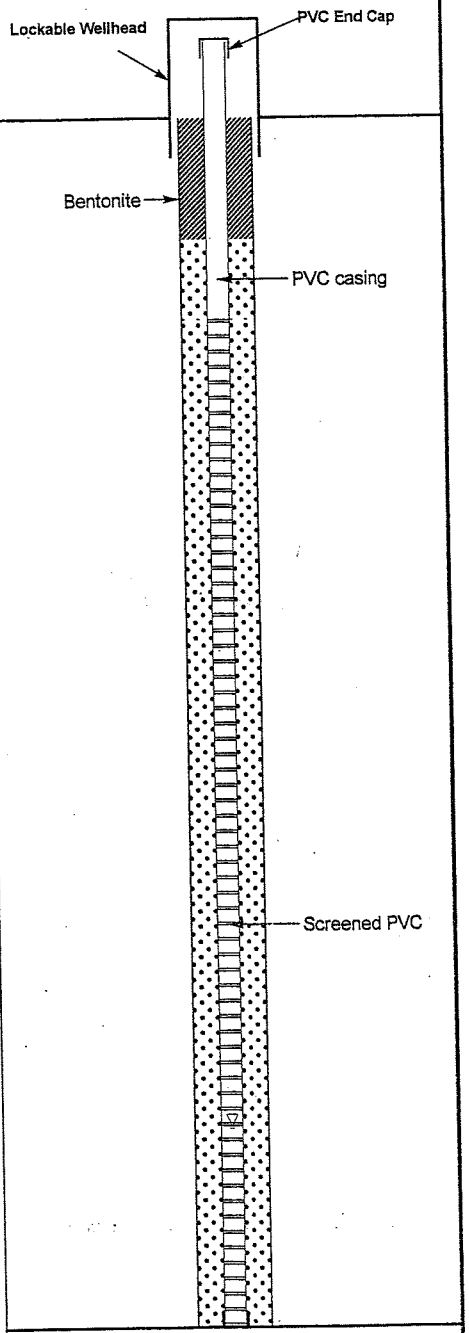
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 9.26 mAHD
Coordinates: 1187125.53 N
289751.15 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Asphalt/gravel	Asphalt	0	
				FILL: slag; black; gravel	Fill		
	0.7	MW11_0.8-1.0		Silty CLAY: soft; moist; dark brown; some sand; medium plasticity	CL	1	M
	9	MW11_1.8-2.0		Clayey SAND: moist; plastic; medium grained; some shells	SC	2	M
	9	MW11_2.8-3.0		SAND: with some clay; medium grained; loose; moist	SC	3	M
	0.5	MW11_3.8-4.0		Sandy CLAY: black; moist; soft; plastic	CL	4	M
	0	MW11_4.8-5.0				5	
				End of Hole		6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

MONITORING WELL MW12

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

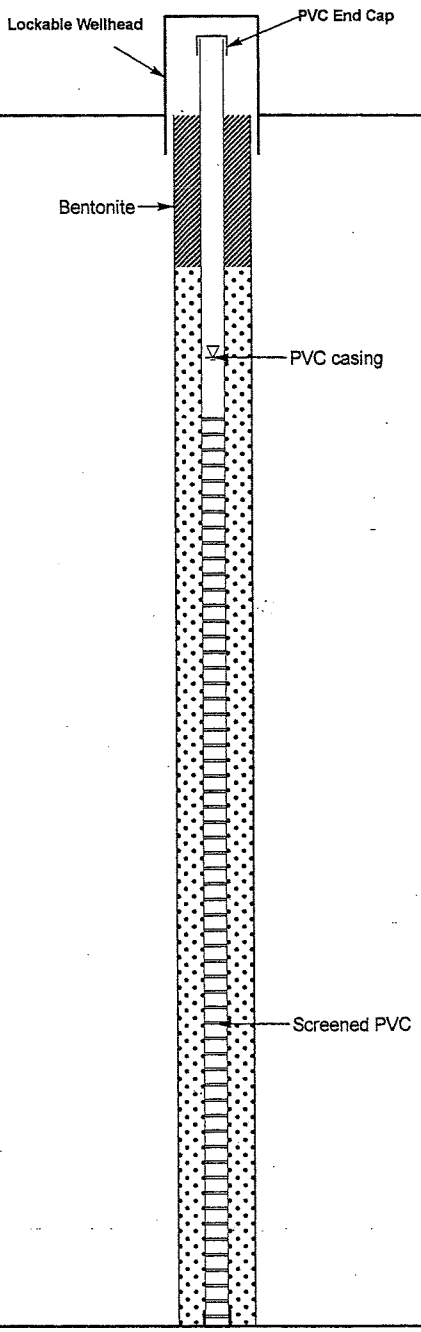
Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 9.82 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: 1187045.44 N	Drill Model: Eelson 3000
Date Started: 07-11-05	Casing Size: mm	289933.54 E	Drill Fluid: none
Date Finished: 07-11-05		Permit No:	

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
			FILL: slag; grey/black; gravel	Fill	0	
			Clayey GRAVEL: clay/gravel mix; grey; wet; soft	GC	1	W
			Clay/gravel mix; black; wet; soft	GC		W
1.1	MW12_0.8-1.0				2	
1.5	MW12_1.8-2.0				3	
9.3	MW12_2.8-3.0				4	
			End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW13

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

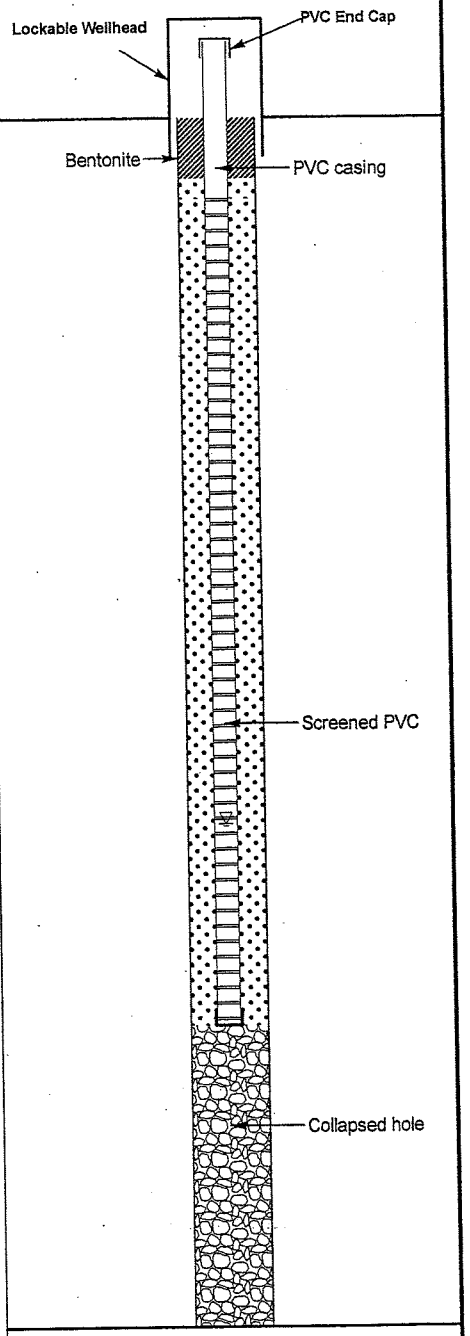
Relative Level: 7.21 mAHD
Coordinates: 1186703.48 N
289999.46 E
Permit No:

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				FILL: slag; black; gravel; dry	Fill	0	D
	0	MW13-0.5-0.7					
	0	MW13-0.9-1.1				1	
	1.6	MW13-1.8-2.0		SAND: brown; medium grained; loose; moist	SW	2	M
				Sandy CLAY: non-plastic; black; moist	CL		M
	1.1	MW13-2.9-3.0				3	
				GRAVEL: black; with some clay; wet	GC		W
	0.1	MW13-3.8-4.0				4	
				Gravelly CLAY: non-plastic; black; moist/wet	GC		M/W
	0.7	MW13-4.8-5.0				5	
				End of Hole		6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

MONITORING WELL MW14

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

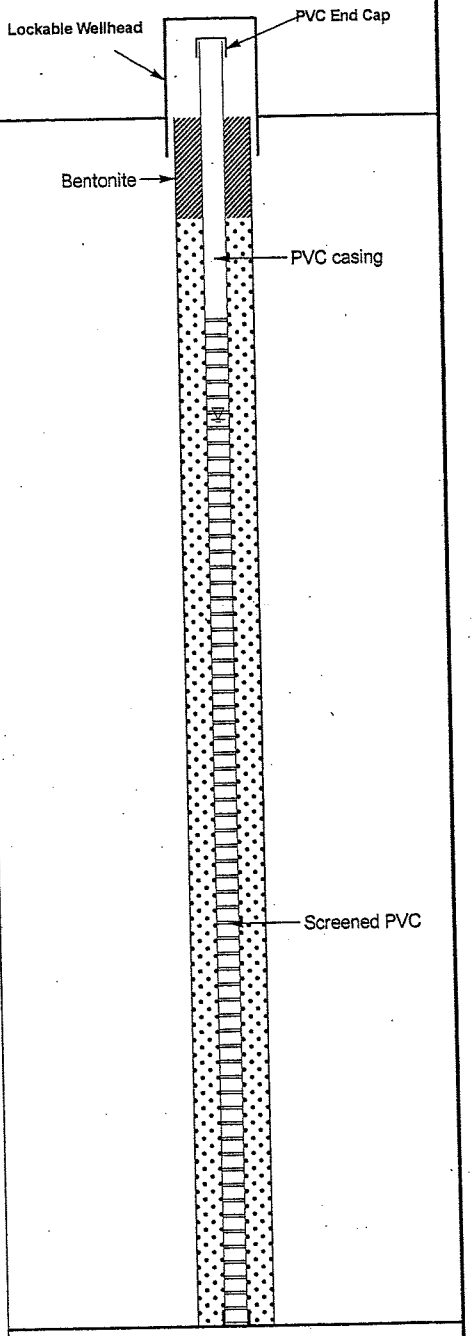
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 9.03 mAHD
Coordinates: 1186856.26 N
289628.51 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				Sandy CLAY: plastic; brown; stiff; wet	CL		W
	1	MW14_0.8-1.0				1	
	1	MW14_1.8-2.0		Silty CLAY: soft; plastic; increase in water; grey	CL	2	W
				increase in sand, soft clay	CL		
	1.2	MW14_2.8-3.0				3	
	1.5	MW14_3.8-4.0				4	
	0.8	MW14_4.8-5.0				5	
	8.3	MW14_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



MONITORING WELL MW15

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

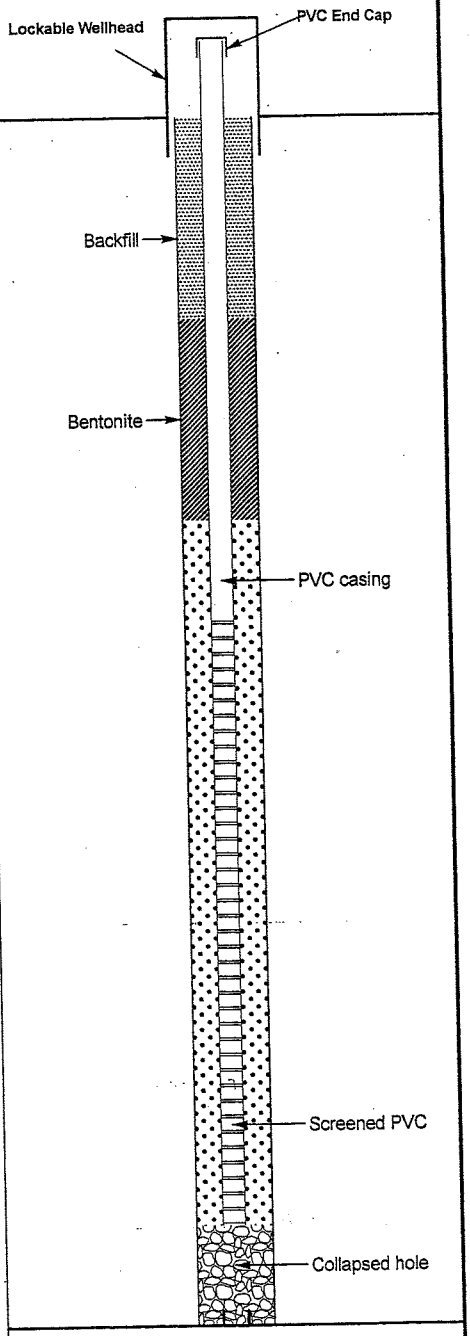
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 6.15 mAHD
Coordinates: 1186365.37 N
289927.58 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Grass		0	
	2.8	MW15_0.4-0.5		CLAY: brown; stiff; some roots	CL		
	5	MW15_0.9-1.0		SAND-CLAY mixture: dark brown; soft; plastic; moist	SC	1	M
	4.6	MW15_1.8-2.0		Sandy CLAY: dark brown; soft; plastic; moist	SC	2	M
	5.3	MW15_2.8-3.0		SAND: brown; loose; medium grained (beach sand)	SW	3	
	5	MW15_3.8-4.0				4	
	4.3	MW15_4.8-5.0		SAND: saturated; light brown/brown mix; some clay; medium grained; loose	SW	5	W
	5.8	MW15_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

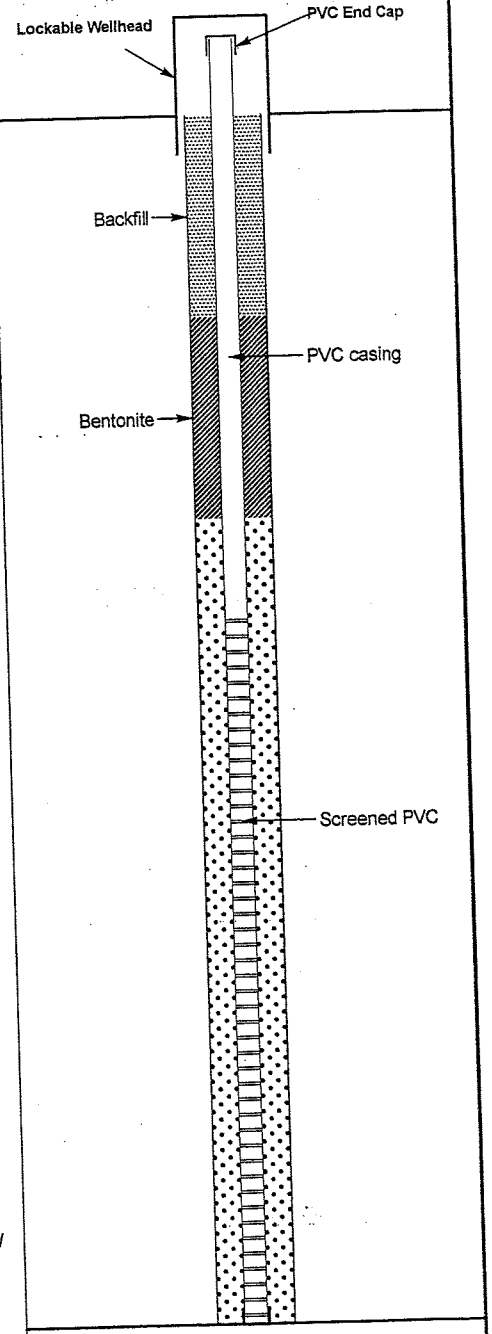
MONITORING WELL MW16

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2	Client: Port Kembla Port Corporation
		Project No.: 43217296	Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 6.42 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 6.00 m	Coordinates: 1186202.24 N	Drill Model: Eelson 3000
Date Started: 09-11-05	Casing Size: mm	289932.38 E	Drill Fluid: none
Date Finished: 09-11-05		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Grass		0	
	0.7	MW16_0.4-0.5		SAND: dark brown; medium grained; dry	SW		D
	0.4	MW16_0.9-1.0		Clayey SAND: non-plastic; loose; medium grained; moist	SC	1	M
	0.6	MW16_1.8-2.0				2	
	3.5	MW16_2.8-3.0				3	
				SAND: brown; medium grained; moist; loose	SW		M
	2.5	MW16_3.8-4.0				4	
	5	MW16_4.8-5.0				5	
				wet; some organic sludge (black)			W
	0	MW16_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW17

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

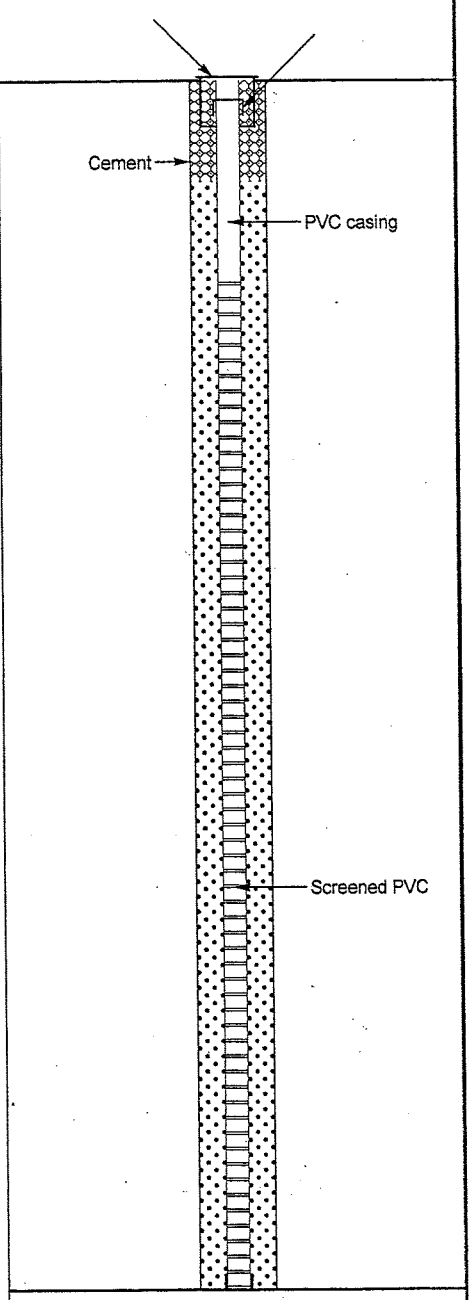
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: mAHD
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				Concrete	Concrete		
				Beach SAND: light brown; medium grained	SW		
	1.2	MW17_0.8-1.0				1	
				SAND: saturated sand; black; some shells; medium grained	SW		W
	1.2	MW17_1.8-2.0 QC05				2	
	0.5	MW17_2.8-3.0		increase in shells		3	
	1.8	MW17_3.8-4.0				4	
	1.3	MW17_4.8-5.0				5	
				End of Hole		6	

WELL CONSTRUCTION DETAILS



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URS

MONITORING WELL MW18

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

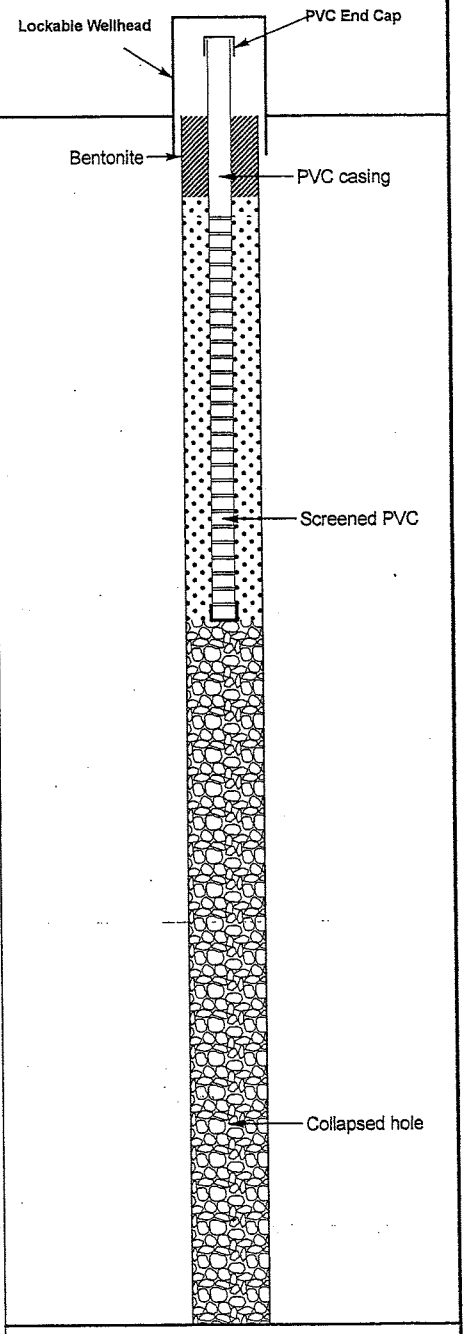
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 4.25 mAHD
Coordinates: 1186037.89 N
289707.35 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt: GRAVEL roadbase; blag	Asphalt	0	
	6	MW18_0.8-1.0		slag		1	
	5.7	MW18_1.8-2.0		Gravelly SAND: hard; medium grained; dry; black (roadbase/fill)	SW	2	D
	5.2	MW18_2.8-3.0				3	
	4.5	MW18_3.8-4.0				4	
	3.4	MW18_4.8-5.0				5	
	4.8	MW18_5.8-6.0				6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW19

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

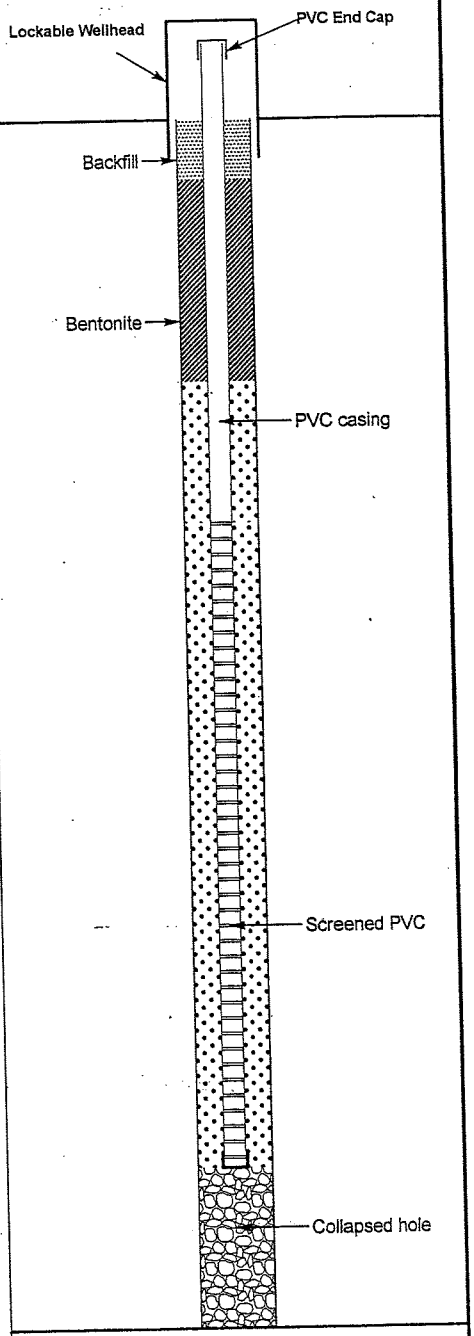
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 5.43 mAHD
Coordinates: 1186219.46 N
289508.14 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				FILL: Gravelly SAND with clay; black/grey; hard	Fill		
	5.6	MW19_0.8-1.0				1	
	5.9	MW19_1.8-2.0		SAND: brown; loose; medium grained	SC	2	
	6.9	MW19_2.8-3.0		Brown SAND with clay; moist; medium grained; loose	SC	3	M
	7.2	MW19_3.8-4.0				4	
	4.9	MW19_4.8-5.0		Silty CLAY: black; wet; plastic; soft	CL	5	W
	6.9	MW19_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



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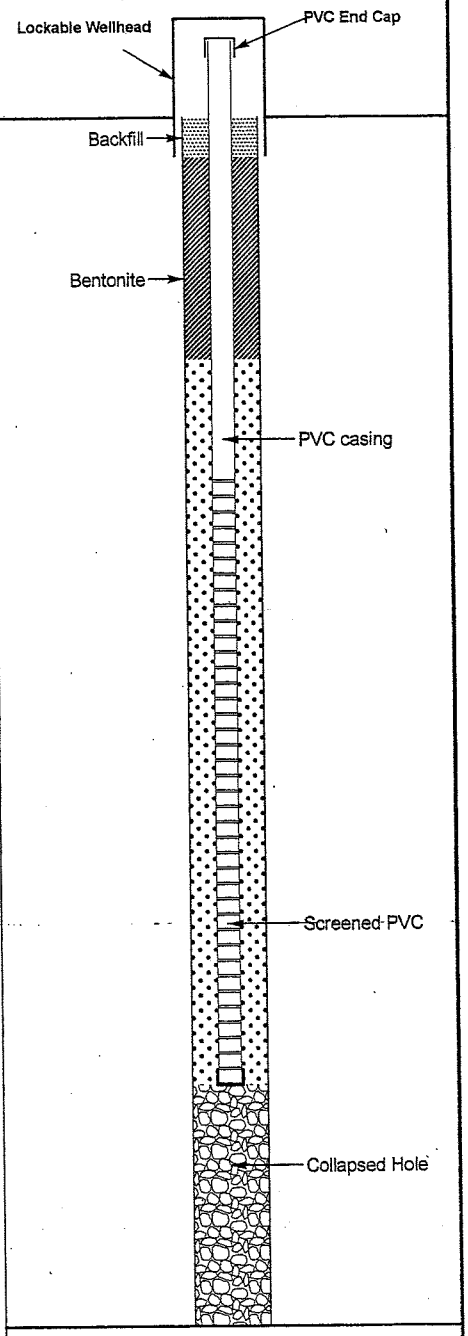
MONITORING WELL MW20

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2 Project No.: 43217296	Client: Port Kembla Port Corporation Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello Checked By: Date Started: 09-11-05 Date Finished: 09-11-05	Bore Size: 150 mm Total Depth: 6.00 m Casing Size: mm	Relative Level: 5.74 mAHD Coordinates: 1186521.46 N 289573.21 E Permit No:	Drill Type: Solid Stem Auger Drill Model: Eelson 3000 Drill Fluid: none

Sample Interval / PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
			Concrete	Concrete	0	
			FILL: black sand; large grained with gravel	FILL		
4.7	MW20_0.8-1.0				1	M
			Sandy CLAY: black; moist; mediums stiff	CL		
2.3	MW20_1.8-2.0				2	
4.5	MW20_2.8-3.0		SAND: brown; saturated; some clay; loose; medium grained	SW	3	W
NA	MW20_3.8-4.0				4	W
2.6	MW20_4.8-5.0		CLAY: with some sand; black; soft; plastic	CL	5	
NA	MW20_5.8-6.0				6	
			End of Hole			

WELL CONSTRUCTION DETAILS



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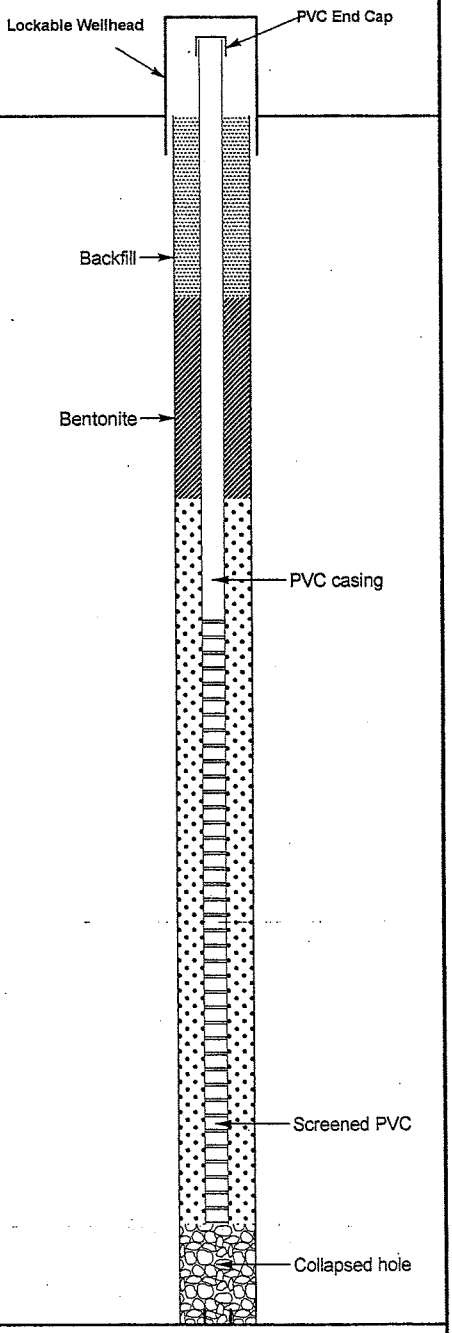
MONITORING WELL MW21

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2 Project No.: 43217296	Client: Port Kembla Port Corporation Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello Checked By: Date Started: 09-11-05 Date Finished: 09-11-05	Bore Size: 150 mm Total Depth: 6.00 m Casing Size: mm	Relative Level: 5.57 mAHD Coordinates: 1186331.20 N 289786.73 E Permit No:	Drill Type: Solid Stem Auger Drill Model: Eelson 3000 Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				FILL: Gravelly SAND; black; large grained; medium hard; dry	Fill		D
	3.9	MW21_0.8-1.0				1	
				Sandy CLAY: black/brown; medium stiff; moist; non-plastic	CL		M
	4.8	MW21_1.8-2.0				2	
	5.4	MW21_2.8-3.0				3	
				Concrete/hard layer	Concrete		
	5.9	MW21_3.8-4.0		SAND: medium grained; moist; loose	SW	4	M
	3.3	MW21_4.8-5.0				5	
				SAND: medium grained; wet; some clay	SW		W
	2.2	MW21_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



MONITORING WELL MW22

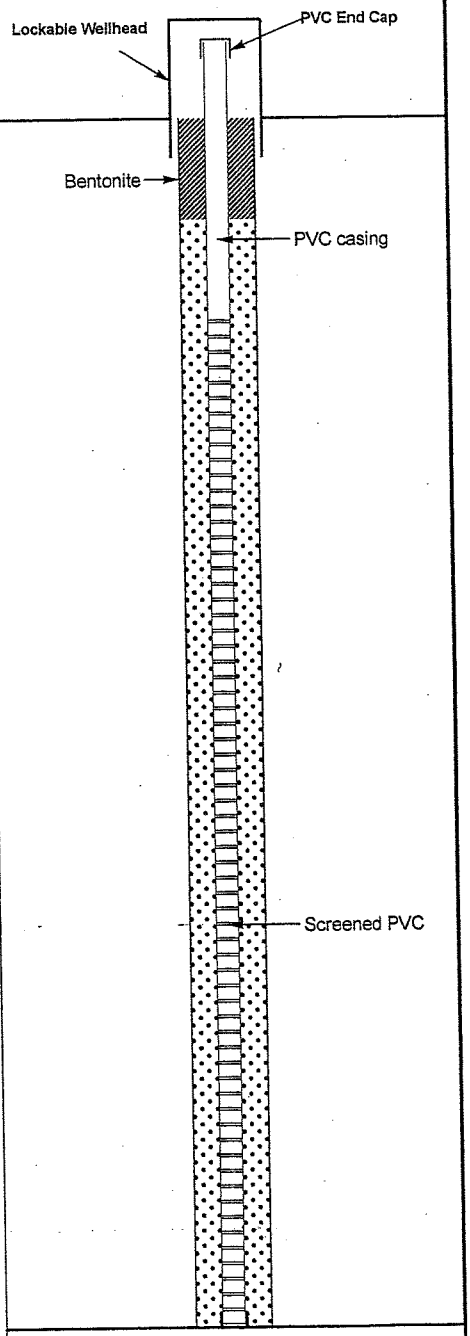
URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd	Project Reference: PKPC Inner Harbour PP2	Client: Port Kembla Port Corporation	
	Project No.: 43217296	Location: Tom Thumb Rd., Port Kembla	
Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 4.44 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 6.00 m	Coordinates: 1186355.15 N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	290339.89 E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				CONCRETE: gravel cemented (2-3 cm diameter pieces)	Concrete		
				SAND: dark brown; medium grain; loose	SW	1	
	1.2	MW22_1.4-1.5					
	0.9	MW22_1.8-2.0		Organic SAND: black; medium grained	SW	2	
				SAND: brown; medium grained; loose	SW		
	1.4	MW22_2.8-3.0				3	
	1.9	MW22_3.8-4.0		organic odour (sulfur)		4	
	0	MW22_4.8-5.0				5	
	0	MW22_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



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URS

SOIL BOREHOLE SB1

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E

Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: black; slag, gravel					
						CL	Sandy CLAY: medium stiff; moist; black; some gravel	M	St		0	SB1_0.8-1.0
				1								
						CL	Silty CLAY: dark brown; stiff; some shells		St		8.1	SB1_1.8-2.0
				2								
						CL	CLAY: dark brown; some silt; soft; moist; plastic	M	S		0.9	SB1_2.8-3.0
				3								
											9.3	SB1_3.8-4.0
				4			End of Hole					

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URS

SOIL BOREHOLE SB2

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: slag, gravel					
						SW	SAND: grey; some clay; saturated; loose; some shell pieces; fine to medium grained	W	L			
											0.4	SB2_0.8-1.0
				1								
											0.6	SB2_1.8-2.0
				2								
											0	SB2_2.8-3.0
				3								
						CL	Sandy CLAY: grey; wet; stiff	W	St		0	SB2_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB3

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 07-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 07-11-05		Permit No:	

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
			▽	0			FILL: slag; black gravel					
				1							0	SB3_0.8-1.0
						CL	Silty CLAY: with some gravel; grey; wet; plastic; soft	W	S			
				2							0	SB3_1.8-2.0
				3							0	SB3_2.8-3.0
				4							0	SB3_3.8-4.0
							End of Hole					

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URS

SOIL BOREHOLE SB4

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: gravel/slag; grey and black; dry	D				
						CL	Silty CLAY: some gravel; stiff; plastic; moist; some shells	M	St		1.3	SB4_0.8-1.0
				1								
				2							0.9	SB4_1.8-2.0
						CL	Sandy CLAY: black; soft; moist; organic matter; moderately plastic	M	S		1.1	SB4_2.8-3.0
				3								
											0.8	SB4_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB5

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: slag; grey/black gravel					
						GC	GRAVEL/CLAY mix: grey; wet; soft; no plasticity	W	S			
			▽	1						0		SB5_0.8-1.0
				2								
				3		CL	Sandy CLAY: dark grey; wet; medium stiffness	W	St	0.3		SB5_2.8-3.0
						SC	Clayey SAND: medium grain; dark brown; some shells; loose		L	0.7		SB5_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB6

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
0		Fill	FILL: slag, gravel; grey/black					
		CL	Sandy CLAY: medium stiff; wet; dark brown; some gravel	W	St		0.6	SB6_0.8-1.0
1								
		CL	Silty CLAY: dark brown; stiff; moist (wet from surface water)	M/W	St		0	SB6_1.8-2.0
2								
		SC	Clayey SAND: black; organic material (looks like top soil); non plastic; moist (not wet); compact	M			0.1	SB6_2.8-3.0
3			Black soil washed off auger by water entrance hole - no recovery					
4			End of Hole					

Method: Casing: Penetration (S M H R): Ground Water Data and Comments

URS

SOIL BOREHOLE SB7

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0			FILL: slag, gravel					
				1		CL	Sandy CLAY: dark brown; moist; medium stiffness; medium plasticity	M	St		2.1	SB7_0.8-1.0
				2		SC	SAND: brown; with some clay; loose; medium grained; moist	M	L		0.6	SB7_1.8-2.0
				3							0.9	SB7_2.8-3.0
				4			End of Hole				1.9	SB7_3.8-4.0

URS

SOIL BOREHOLE SB8

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						Fill	FILL: Gravelly SAND					
						CL	Silty CLAY: black; moist; medium stiffness; plastic	M	St		0	SB8_0.8-1.0
				1		SC	SAND: medium grained; loose; some clay; wet; grey	W	L			
											0	SB8_1.8-2.0
				2								
											0	SB8_2.8-3.0
				3								
											3.7	SB8_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB9

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						CL	Sandy CLAY: grey; wet; plastic; some gravel	W			4.3	SB9_0.8-1.0
				1								
			▽	2			increased gravel; very wet	W			NA	SB9_1.8-2.0
				3								SB9_2.8-3.0
				4			End of Hole					

URS

SOIL BOREHOLE SB10

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: Gravel					
											4.9	SB10_0.8-1.0
				1		SC	Clayey SAND: brown; dry; medium grained	D				
											7.4	SB10_1.8-2.0
				2		SW	SAND: brown; loose; medium grained; some clay		L			
											6.5	SB10_2.8-3.0
				3				M				
											3.5	SB10_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB11

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						CL	Sandy CLAY: black; loose		L		1	SB11_0.3-0.5
						SW	Clayey SAND: brown; moist; medium grained; loose	M	L		0.9	SB6_0.8-1.0
				1								
			▽			SW	SAND: light brown; medium grained; loose		L		1	SB6_1.8-2.0
				2								
						SW	Beach sand				0.6	SB6_2.8-3.0
				3								
											0.6	SB6_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB12

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations)	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt Concrete	Asphalt Concrete					
						SW	Beach SAND: light brown; medium grained; dry	D	L		2.5	SB12_0.8-1.0
				1								
			▽			SW	SAND: saturated; black; medium grained; some shells	W	L		1.4	SB12_1.8-2.0
				2								
											1.3	SB12_2.8-3.0
				3			more shells					
											2	SB12_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB13

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt: gravel/sand mix; dry	D				
				1		SW	SAND: dark brown; some gravel; dry; medium grained	D			2.4	SB13_0.8-1.0
				2		CL	Silty CLAY: dark brown/black; some sand; moist; plastic	M			2.3	SB13_1.8-2.0
			▽	3		SW	Beach SAND	W	L		2.1	SB13_2.8-3.0
						SW	saturated SAND; grey; medium grained	W	L		2.5	SB13_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB14

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
				1		GP	GRAVEL: grey; large grain size; sand mixed in		L		2.4	SB14_0.8-1.0
				2			End of Hole: Refusal; concrete encountered					
				3								
				4								

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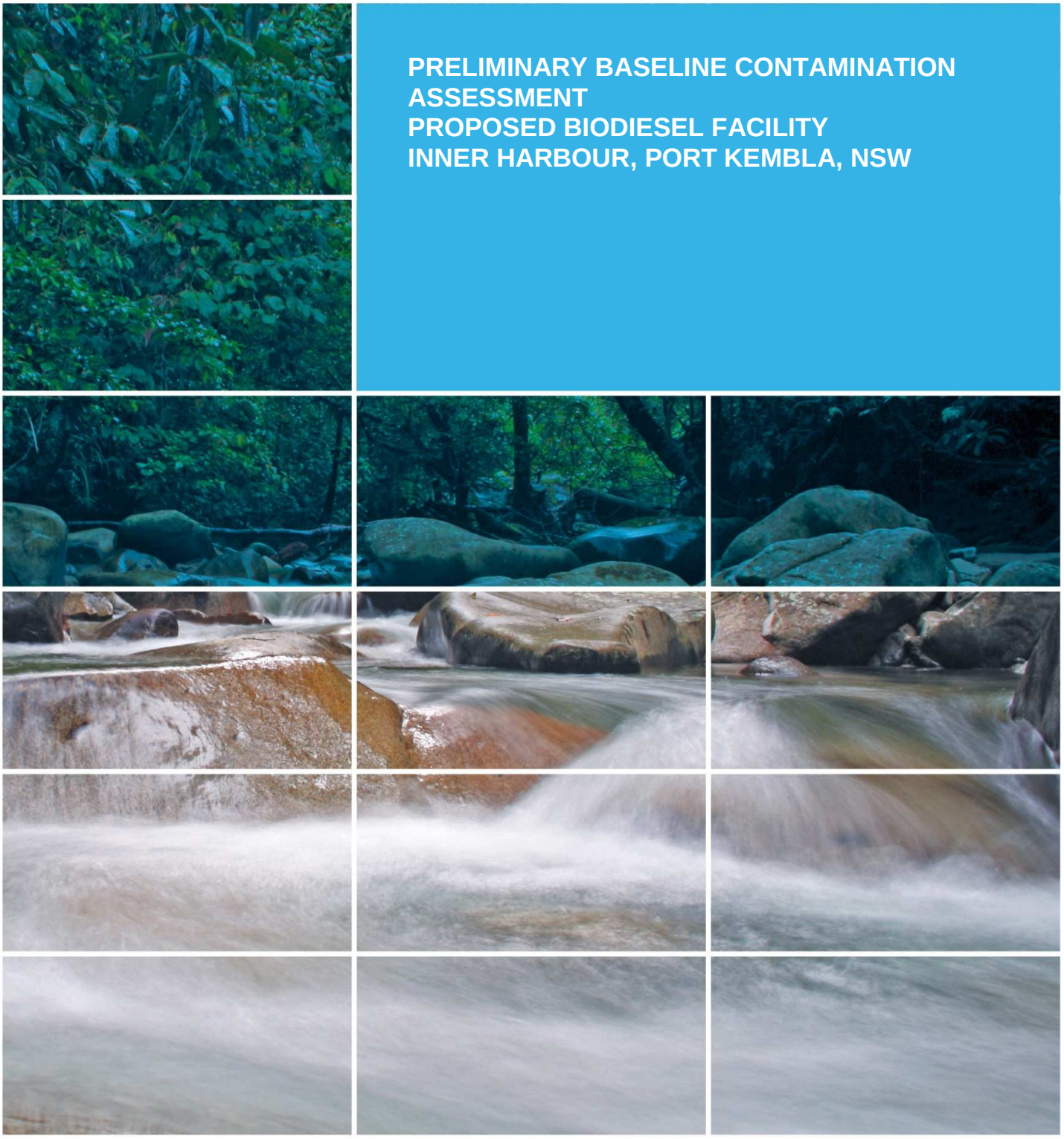
PRELIMINARY BASELINE CONTAMINATION ASSESSMENT
PROPOSED BIODIESEL FACILITY
INNER HARBOUR, PORT KEMBLA, NSW



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SOCIAL AND SAFETY PERFORMANCE

PRELIMINARY BASELINE CONTAMINATION ASSESSMENT - PROPOSED BIODIESEL FACILITY INNER HARBOUR, PORT KEMBLA, NSW

Prepared for:

Port Kembla Port Corporation
91 Foreshore Road
P.O. Box 89
Port Kembla NSW 2505

Report Date: 5 December 2012
Project Ref: ENAUWOLL04107AA

Written/Submitted by:	Reviewed/Approved by:
JAMES BOYLE	MANUEL FERNANDEZ
Environmental Scientist	Principal

Coffey Environments Australia Pty Ltd ABN 65 140 765 902
118 Auburn Street Wollongong NSW 2500 Australia
PO Box 1651 Wollongong 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 coffey.com

coffey environments
SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

5 December 2012

Port Kembla Port Corporation
91 Foreshore Road
P.O. Box 89
Port Kembla NSW 2505

Attention: Mr Trevor Brown

Dear Trevor

RE: Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility, Inner Harbour, Port Kembla, NSW, 2505

Coffey is pleased to present this Preliminary Baseline Contamination Assessment report that was prepared for the above site.

We draw your attention to the attached sheets titled “Important Information about your Coffey Environmental Report” which should be read in conjunction with this report.

If you require further information or clarification regarding any aspect of this report, please do not hesitate to contact the undersigned.

For and on behalf of Coffey Environments Australia Pty Ltd

M. Fernandez

MANUEL FERNANDEZ
Principal

Coffey Environments Australia Pty Ltd ABN 65 140 765 902
118 Auburn Street Wollongong NSW 2500 Australia
PO Box 1651 Wollongong 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 coffey.com

RECORD OF DISTRIBUTION

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1	ENAUWOLL04107AA-R01.doc	Final	5 December 2012	Coffey Environments Australia Pty Ltd	
1	ENAUWOLL04107AA-R01a.pdf	Draft	15 October 2012	Port Kembla Port Corporation	
1	ENAUWOLL04107AA-R01a.doc	Draft	15 October 2012	Coffey Environments Australia Pty Ltd	

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LIST OF ATTACHMENTS

Important Information about your Coffey Environmental Report

Tables (within text)

Tables (at end of text)

Figures

Appendices

ABBREVIATIONS

AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
C_6-C_{36}	Hydrocarbon chain length fraction
Bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CTP	Coffey Test Pit
COC	Chain of Custody
DECC	Department of Environment and Climate Change (NSW)
ESA	Environmental Site Assessment
LOR	Limit of Reporting
mg/kg	milligrams per kilogram
NATA	National Association of Testing Authorities
NEHF	National Environmental Health Forum
NEPM	National Environment Protection Measure
NSW EPA	Environment Protection Authority of New South Wales
OCP	Organochlorine Pesticide
OPP	Organophosphorous Pesticide
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionisation Detector
PKPC	Port Kembla Port Corporation
QA	Quality Assurance
QC	Quality Control

ABBREVIATIONS

RL	Reduced Level
RPD	Relative Percent Difference
SIL	Soil Investigation Level
SOP	Standard Operating Procedures
SVOC	Semi-volatile Organic Compound
TPH	Total Petroleum Hydrocarbon
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Coffey Environments Australia Pty Ltd (Coffey) was commissioned by Port Kembla Port Corporation (PKPC) to carry out a preliminary baseline contamination assessment of the site of the proposed biodiesel facility, located off Tom Thumb Road, Inner Harbour, Port Kembla, NSW ('the site'). The work was completed in general accordance with our proposal Ref: ENAUWOLL04107AA-P01 Rev 1, dated 6 September 2012.

We understand that PKPC are the owners of the property, and intend to lease the site for eventual use as a biodiesel manufacturing facility, and PKPC required the baseline contamination assessment for due diligence purposes. We understand that the size of the property is approximately 45,000m^2, is made up of three separate areas and that the property is currently vacant, with the exception of a stormwater filtration pond in the area of the site to the north of Tom Thumb Road, and a car storage facility located off Moreton Way.

The objectives of the preliminary baseline contamination assessment were to assess the following in order to establish a baseline prior to occupation by the biodiesel processing facility:

- The existing levels of contamination at the site from previous historical activities; and
- Assess existing levels of chemical contaminants potentially to be used the biodiesel facility in the areas where these chemicals are likely to be used.

The methodology adopted for this assessment to meet the objective comprised collecting soil samples from fourteen test pits located across the site, laboratory analysis of selected soil samples for a variety of contaminants; and reporting the results of the assessment. Test pits were generally situated beneath proposed structures that will be part of the biodiesel facility.

The site was generally covered with cemented slag pavement. Fill materials of varying composition including ash and metallurgical slag were encountered. Fill contained inclusions of other anthropogenic materials in majority of locations such as metal, plastic, concrete, brick etc. Reworked sands (possibly former dredged material) were encountered beneath the fill in majority of test pits. Groundwater was not encountered within the test pits.

The results of this preliminary baseline contamination assessment identified that existing levels of chemical contaminants were below the adopted soil investigation levels for industrial/commercial landuse at the locations tested.

The soil samples collected from the site are considered to provide an indication of the baseline conditions at the time of testing. Future assessments also need to take into consideration the actual type of activities, location of activities and products/chemicals/wastes stored and generated during future operations which may change from those presented in this report.

We draw your attention to the attached sheets titled "Important Information about your Coffey Environmental Report" and to the statement of limitations in Section 10 of this report.

****

1 INTRODUCTION

1.1 Background

Coffey Environments Australia Pty Ltd (Coffey) was commissioned by Port Kembla Port Corporation (PKPC) to carry out a preliminary baseline contamination assessment of the site of the proposed biodiesel facility, located off Tom Thumb Road, Inner Harbour, Port Kembla, NSW ('the site'). The work was completed in general accordance with our proposal Ref: ENAUWOLL04107AA-P01 Rev 1, dated 6 September 2012. This report presents the results of the preliminary baseline contamination assessment.

We understand that PKPC are the owners of the property, and intend to lease the site for eventual use as a biodiesel manufacturing facility, and PKPC required the baseline contamination assessment for due diligence purposes. We understand that the size of the property is approximately 45,000m^2, is made up of three separate areas and that the property is currently vacant, with the exception of a stormwater filtration pond in the area of the site to the north of Tom Thumb Road, and a car storage facility located off Moreton Way. The location of the site is shown in Figure 1.

1.2 Objectives

The objectives of the preliminary baseline contamination assessment were to assess the following in order to establish a baseline prior to occupation by the biodiesel processing facility:

- The existing levels of contamination at the site from previous historical activities; and
- Assess existing levels of chemical contaminants potentially to be used the biodiesel facility in the areas where these chemicals are likely to be used.

"Contamination" of land, as defined in the National Environment Protection Measure (NEPC 1999), means the condition of land or water where any chemical substance or waste has been added at above background level and represents, or potentially represents, an adverse health or environmental impact.

This baseline assessment was limited to the assessment of soil contamination and did not directly assess baseline groundwater quality.

1.3 Scope of Work

The following scope of work was carried out to meet the project objectives:

- A site walkover to visually assess potential sources of contamination, observe surrounding land uses, topography, drainage, nearby sensitive environments.
- Collecting soil samples from fourteen (14) investigation locations across the site using test pits. Sample locations targeted areas where potential contaminants may be used/stored within the proposed biodiesel facility (based on plans provided).

- Laboratory analysis of selected soil samples for a suite of potential contaminants of concern, including heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) and Polycyclic Aromatic Hydrocarbons (PAH), speciated phenols, Organochlorine pesticides (OCP); Organophosphorus pesticides (OPP), Polychlorinated biphenyls (PCB), asbestos, alcohols (methanol and ethanol), methyl acrylate, semi volatile and volatile organic compounds (SVOCs and VOCs).
- Reporting the results of the assessment. This report presents the results of the fieldwork, presenting and interpreting the analytical results and findings and comparing results to guidelines for industrial/commercial land use. The report makes conclusions in relation to objectives in Section 1.2. The report has been generally prepared in accordance with the NSW Office of Environment and Heritage (2000):'Guidelines for Consultants Reporting on Contaminated Sites' and establishes a baseline for the site soils.

2 PROPOSED DEVELOPMENT

Information provided by PKPC indicates that the site is intended to be leased to National Biodiesel Ltd, who will redevelop the site into a biodiesel production plant. Figures 3A and 3B show the general proposed layout as provided by PKPC. Based on an Environmental Assessment for the proposed facility (undertaken by Maunsell, dated 5 December 2008), available by public domain, we understand that the new facility will generally comprise the following:

- Construction of a soybean processing and biodiesel production facility, which will include the following plant:
    - Soybean preparation and extraction plant. The preparation plant is where the soybean is modified to facilitate extraction. The extraction plant is where most of the oil will be extracted from the soy bean. As part of this process, the soybeans will be immersed in a hexane solvent.
    - Pre-treatment facility. This plant includes a pre-treatment facility, where impurities are stripped from the extracted oil. As part of the pre-treatment, the acids and bleaching agents are added to the oil to remove impurities.
    - Biodiesel and glycerine refining plant. Following pre-treatment, oils are subjected to transesterification. The transesterification process is a chemical reaction during which an alcohol (methanol in this case) is reacted with the triglycerides contained in soybean oil, forming methyl ester and glycerine.
- Installation of the following structures:
    - A ship unloader;
    - Conveyor belts and a bucket elevator to facilitate transfer and handling of raw material;
    - Administration and training offices;
    - Workshops/Boiler Rooms/Ovens;
    - Above ground tanks for storage of refined biodiesel; and
    - Vehicle Manoeuvring and Parking Areas.
- In addition, existing silos in the adjacent Graincorp property to the west will be utilised for the storage of soybean.

Based on a cursory review of the Environmental Assessment, there are several chemicals used in the operating of the biodiesel plant. These chemicals include, but are not limited to:

- Hexane
- Methanol and glycerol;
- Sodium methylates;
- Sulphuric, hydrochloric and citric acids; and
- Miscellaneous chemicals used in maintenance activities (including solvents, paints and oils).

3 SITE LOCATION AND LANDUSE

The Site is made up of three separate parcels of land located off Tom Thumb Road and Moreton Way, Inner Harbour, Port Kembla, NSW. A summary of the Site identification information is presented in Table 1 below. The Site locality is shown in Figure 1. A Site layout plan is presented in Figure 2 showing the site investigation boundaries and relevant surrounding land uses.

The parcels of land are located on the fringe of the inner harbour of Port Kembla and located to the east and west of a drainage channel (Gurungaty waterway), which flows south towards inner harbour. For the purposes of this report, the three parcels of land have been designated into two main zones (Zone 1 and Zone 2) (See Figure 2):

Zone 1: an approximately rectangular portion of land between Moreton Way, inner harbour, Gurungaty waterway and Tom Thumb Road;

Zone 2: an irregular shaped portion of land between Gurungaty waterway, settlement ponds, coal loading facility and the railway. Zone 2 is bisected by Tom Thumb Road.

Information within this Section has been supplemented with site specific information from a contamination assessment undertaken at the site by URS in 2008 (titled *National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW, dated 25 September 2008, , Report Number 43217865),* and was included within Appendix J of the Environmental Assessment, sourced from the Department of Planning website. For a summary of the objectives and findings of this report, refer to Section 3.4.

Table 1: Summary of Site Identification

Street Address	Off Tom Thumb Road, Inner Harbour
Area	4.5 hectares (approx.)
Title Identifiers	Lot 301 DP 1148391 (Zone 1) Lot 2 DP 1125445 and Part of Lot 101 DP1120801 (Zone 2)
Zoning	Zone SP1 (Special Activities) under NSW State Environmental Planning Policy (Major Projects) Amendment (Three Ports) 2009.
Local Government Area	Wollongong
Grid Co-ordinates (Aust. Map Grid)	E150^{0}53'36.06"; N34^{0}27'08.57" (south western corner of Zone 1)
Current Owner(s)	Port Kembla Port Corporation
Current Site Use(s)	Zone 1 - Car storage facility, Zone 2 – Vacant

The Site is bounded by:

- Moreton Way followed by Graincorp terminal to the west.
- Inner Harbour to the south of the site. Stormwater treatment ponds are located to the immediate south of Zone 2.
- Coal storage and loading terminal to the east.
- Tom Thumb Road (Zone 1 only), followed by railway to the north.

The general surrounding landuse is heavy industrial with the Tasman Sea to the east. Surrounding land uses to the site include:

- Grain and coal loading terminals to the south of Zone 1 and 2, respectively;
- Coal stockpiles to the east;
- Graincorp grain storage silos and loading facilities to the west;
- Coal loading facility (for trains and trucks) to the north east;
- Car storage facilities to the northwest; and
- Inner harbour further to the south.

3.1 Topography and Drainage

Reference to the Wollongong 1:25,000 Topographic Map indicates that the Site lies at an elevation less than 10m above Australian Height Datum (AHD).

The site is relatively level, and generally covered with cemented slag, with areas of loose gravel to the north of Tom Thumb Road in Zone 2. Surface water runoff from the Site is expected to flow into Inner Harbour, or towards stormwater treatment ponds. Some infiltration of surface water may occur in unpaved areas.

3.2 Soil Landscape

Reference to the Soil Conservation Service of NSW (1990) Wollongong-Port hacking 1: 100,000 Soil Landscape Series Sheet (9029-9129) indicates that the Site is located within the 'Disturbed Terrain' soil landscape grouping. The topography varies from level plains to undulating terrain, and has been disturbed by human activity to a depth of at least 1m. The original soil has been removed, greatly disturbed or buried. Most of these areas have been levelled to slopes <5%. Landfill includes soil, rock, building and waste material. The original vegetation has been completely removed.

3.3 Local Geology, Hydrogeology and Groundwater Use

Reference to the Department of Mineral Resources (1974) Wollongong 1: 50,000 Geological Sheet (9029-11) indicates that the Site is underlain by Quaternary alluvium, gravel, beach and dune sand. Based on Coffey's knowledge of the history of the Port Kembla area, it is possible that these quaternary deposits have been reworked due historical land reclamation activities.

The NSW Office of Water provides information to a website listed as www.nratlas.nsw.gov.au/wmc with search tools that provide summary reports on registered bores in NSW. Coffey carried out a search of registered bores on this website on the 4 October 2012. The results of this search indicated that that there were no registered bores within a 1 kilometre radius of the Site.

The search results are included at the end of Appendix A.

Based on observations of the surrounding topography and available hydrogeological information, groundwater in the general area is expected to be located within 10m of the ground surface. It is considered that due to the site's proximity to the sea, that groundwater levels within the local area could be affected by the tide.

3.4 Previous Investigation (URS, 2008)

A contamination assessment was undertaken at the site by URS in 2008 (titled *National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW, dated 25 September 2008, Report Number 43217865),* and was included within Appendix J of the Environmental Assessment. The study area for this investigation comprised of the site, and additional areas to the immediate west. Intrusive investigation locations were situated across this investigation area. A summary of the relevant details of the report are summarised below:

The stated objective was to *'... assess the soil and groundwater conditions present within the subject site, including:*

- *assess any soil or groundwater contamination, in accordance with the requirements of the Director General of the Department of Planning (DoP) and Department of Water and Energy (DWE);*
- *consider whether or not there is potential for salinity and acid sulfate soil impacts; and*
- *make recommendations based on the above findings as to whether the land is suitable for the proposed development'* (URS 2008).

To meet this objective a site history review was carried out comprising review of data from historical reports undertaken at the site and surrounding area to the north and west and implementation of a soil and groundwater analysis program.

A summary of the site history relevant to the site indicated that the inner harbour was originally part of the Tom Thumb Lagoon. The inner harbour was filled with blast furnace slag and a casting basin provided for construction of sections of the Sydney Harbour Tunnel during the late 1980s and early 1990s. In the late 1990s Tom Thumb Road and the rail spur were constructed, following which approximately 2 million tonnes of blast furnace slag was used to reclaim and level the area.

The Graincorp facility (to the west of the site) was constructed in 1989 and is dominated by concrete bulk grain silos. URS indicated that pesticides were used to clean out the inside of GrainCorp silos. There had been no known major losses or spills of any drums, pesticides or fire water on the Graincorp site.

Out of several sampling locations across the area of investigation of the URS report, one monitoring well (labelled IHMW10) was located within Zone 1, two soils bores (labelled SB13 and SB14) and one groundwater monitoring well (labelled MW22) was located within Zone 2. Based on historical analytical results (as illustrated in Figure 3 of the URS report), soil analytical result 'exceedences' were not detected in samples analysed from SB13 and SB14.

Several exceedences of groundwater investigation levels (for protection of marine water ecosystems – ANZECC 2001) were reported at the site, including:

- Copper concentrations of 3µg/L and 2µg/L were detected in groundwater monitoring wells MW22 in 2006 and IHMW10 in 2003, respectively.
- A zinc concentration of 43µg/L was also detected in IHMW10 (in 2006), and
- A total PAH concentration of 8.6µg/L was detected in MW22 (in 2006).

URS indicated that the elevated concentrations of metals and PAHs within the groundwater are consistent with industrial land reclaimed with blast furnace slag based fill material. In addition, URS indicated that water quality in the Inner Harbour is also affected by urban and industrial runoff from surrounding areas.

The report concluded that based on these findings, the allotments of interest were not considered to be contaminated and were considered suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the allotments of interest have lead to contamination of the surrounding water bodies.

4 SITE WALKOVER

4.1 Site Observations and Site Features

Observations of the site were made by an environmental engineer on 14 September 2012. A summary of the relevant observations made is described below, with the site layout and relevant features shown in Figure 2. Relevant site photographs are also presented in Appendix B.

- Both Zone 1 and Zone 2 were generally flat and vacant parcels of land with a gravelly compacted hardstand surface (possibly fine grained blast furnace slag dust). Sandy soils were observed at the surface in the separable portion of land towards the north-west of Zone 2;
- Zone 1 was observed to be used as a new vehicle storage area occupying majority of the site (see Photos 1 and 2), whilst Zone 2 was unoccupied (see Photo 3). The north-west portion of Zone 2, north of Tom Thumb Road, was unoccupied except for piles of timber and concrete railway sleepers (see Photo 4 and 5);
- Vegetation (including grass and small shrubs) was observed in the north-western corner of Zone 2 (north of Tom Thumb Road), and in the north-western corner of Zone 1;
- Access to Zone 1 was via a padlocked gate through temporary fencing off Moreton Way to the west of the site. Access to Zone 2 was via an open gate through temporary fencing off Tom Thumb Road to the west of the site. The lot boundaries were not easily distinguishable in some areas of the site where fencing was not present, including along the banks of the Gurungaty waterway, towards the north of Zone 1 and towards the south of Zone 2;
- The Gurungaty waterway was observed to have tidal water flows and aquatic life (including fish). The water level was observed to be greater than 5m below the ground surface of Zone 1. The western bank of the Gurungaty waterway was lined with geo-textiles. The eastern bank consisted cobbly fill materials with some stormwater drainage outlets from an adjacent unnamed roadway to the east;
- A concrete-lined basin, approximately 10m x 5m in size, and approximately 0.5m deep, was observed north of Zone 2, adjacent to Tom Thumb Road (see Photo 6). During the fieldwork, this basin was observed to contain water;
- Disturbed soil was observed at the surface in multiple areas across the site which suggested previous excavation/test pitting activities (see Photos 7 and 8);
- Towards the south of Zone 2, the site terrain was observed to be raised by approximately 2m relative to surrounding land (see Photo 9). A settlement pond was observed to the immediate south of Zone 2 (see Photo 10). The water level in the settlement pond was observed to be approximately 5m below the ground surface of Zone 2; and
- No staining or other visual evidence of contamination was observed on the ground surface.

5 SAMPLING PLAN

Fourteen sample locations were agreed with PKPC to assess baseline conditions at the site and based primarily to target the location of future biodiesel installations and also to gain a broad site coverage. Test pit locations targeted the following proposed installations:

5.1 Zone 1

- Test pit CTP01 was situated beneath a proposed soy bean silo;
- Test pit CTP02 was situated beneath the proposed 'preparations' building;
- Test pit CTP03 was situated beneath the proposed 'extractions' building;
- Test pit CTP04 was situated beneath the proposed soybean meal storage warehouse;
- Test pit CTP05 was situated beneath a proposed boiler house. The boiler house will be used to provide steam for the refining process; and
- Test pit CTP06 was situated beneath the maintenance workshop.

5.2 Zone 2

- Test pits CTP07 and CTP09 were situated beneath the proposed biodiesel storage tanks;
- Test pit CTP08 was situated beneath the proposed biodiesel production plant;
- Test pit CTP10 was situated beneath proposed buffer tanks;
- Test pit CTP11 was situated adjacent to the proposed boiler room, air compressor plant and acid storage tanks;
- Test pit CTP12 is situated beneath the proposed glycerine processing plant;
- Test pit CTP13 is situated in the vicinity of the proposed Methanol storage tanks; and
- Test pit CTP14 was situated in the vicinity of the proposed administration building.

Sample locations are shown in Figure 4.

Soil samples were analysed for a broad range of contaminants, including TPH, PAH, BTEX, heavy metals, asbestos, OCP/OPP, speciated phenols, SVOCs, VOCs and PCBs. In addition, given the likely chemicals to be used as part of the biodiesel refining process, a selected soil samples were also analysed for alcohols (including methanol and ethanol) and methyl acrylate (an ester) in areas where these chemicals are likely to be used.

Due to the likelihood of future contamination originating from above ground sources, soil samples from at or near the ground surface at each test pit location was analysed. Additional analysis of deeper soil samples was scheduled if contamination was suspected, based on site observations and screening results or to target different soil layers.

6 ASSESSMENT CRITERIA

6.1 Headspace Screening Criteria

For the purposes of this report the generalised headspace screening criteria presented in Table 2 have been used as a guide to the potential for volatile hydrocarbon contamination. These criteria have been developed by Coffey based on our experience (where monitoring for volatile organic compounds has occurred) to assist in the assessment of hydrocarbon contamination levels in soil. It is important to note that these generalised criteria are only a guide and that the PID has a different response to different contaminants.

Table 2: Generalised Headspace Screening Criteria

PID reading as ppm isobutylene	Generalised soil vapour content description relating to volatile petroleum hydrocarbon contamination
<20 ppm	NEGLIGIBLE
20 to 60 ppm	LOW
60 - 300 ppm	MODERATE
>300 ppm	SIGNIFICANT

6.2 Soil Investigation Levels (SILs)

In order to assess the degree of contamination in soils on the site, the results of soil analyses were compared with guidelines in the following references:

- NSW DEC (2006) Guidelines for the NSW Auditor Scheme (Second Edition);
- NSW EPA (1994) Guidelines for Assessing Service Station Sites; and
- NEPC (1999) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM).

For assessing contamination levels in soil in urban settings, The NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme and the NEPC (1999) present health based investigation levels (HILs) for different land uses (e.g. industrial/commercial, residential, recreational etc.) as well as provisional phytotoxicity based investigation levels or ecology based investigation levels (EILs). EILs are generally not applicable to industrial sites.

As the subject site is currently used for commercial purposes, and the proposed land use will be a biodiesel processing facility, the levels for commercial/industrial landuse are considered the most applicable to this subject site. For commercial/industrial sites, the HILs listed in Column 4 (NEHF F) of the table in the NSW DEC (2006) guidelines may be adopted as the assessment criteria for the respective contaminants of concern.

NSW DEC (2006) Guidelines do not provide levels for volatile petroleum hydrocarbon compounds. NSW EPA (1994) Guidelines for Assessing Service Station Sites provide an indication of acceptable levels for sensitive landuse for petroleum hydrocarbons compounds. The NSW DECCW has advised that these guidelines should also be used without multiplication for less sensitive landuses. For semi-volatile petroleum hydrocarbons (C16–C35 and >C35) investigation levels are provided in the NSW DEC (2006) Guidelines, however, these are based on the NEPC (1999) health-based investigation levels, which require the laboratory analysis to unequivocally differentiate between aromatic and aliphatic compounds. The relevant values in NSW EPA service station guidelines will be applied in the first instance as broad criteria to assess TPH concentrations. If TPH impacts are identified in soil, then aromatic/aliphatic investigation levels from NSW DEC (2006) may be utilised to assess the aromatic/aliphatic speciation of TPH.

NSW DEC (2006) states that there are currently no national or NSW DEC endorsed guidelines relating to human health or environmental investigation of material containing asbestos on sites. Site auditors must exercise their judgement when assessing if a site is suitable for a specific use in the light of evidence that asbestos may be a chemical of concern. NSW Health will provide advice to auditors on a case by case basis where appropriate. Enhealth (2005) Guidelines for Asbestos in the Non-Occupational Environment, provides some guidance on assessing and managing asbestos in soil although does not provide a threshold concentration or investigation level for asbestos. For this site, Coffey adopted a conservative criterion for asbestos of no detectable asbestos present in soils. Other risk based assessment criteria can be used if asbestos is detected but would require further assessment.

A summary of soil assessment criteria is presented in Table LR1.

7 FIELD INVESTIGATIONS

Field investigations were carried out between the 14 September and 25 September 2012, in the full time presence of an environmental engineer from our Wollongong office.

Fourteen (14) test pits were excavated using a 20 tonne tracked excavator. Following sampling, the test pits were reinstated and compacted using a vibrating plate to achieve a finished surface approximately level with the surrounding ground level (as shown in Figure 11). The approximate sampling locations were measured using a GPS and are shown in Figure 4. Logs of the test pits carried out as part of this assessment are included in Appendix C.

7.1 Soil Sampling

During test pitting, samples were collected with a new pair of nitrile gloves, either from the test pit walls after removal of the smeared surface, or from soil in the centre of the excavator bucket, which had not come into contact with the bucket. Soil samples were collected with a new pair of nitrile gloves between sampling locations.

Soil samples were generally collected at the surface, in the fill or at major changes in stratigraphy or where evidence of odours or staining was noted (if observed). Clean 250 mL glass jars were filled with soil to the brim and immediately sealed with Teflon lined caps to lower the potential for loss of volatile contaminants. Samples were then labelled and placed directly into ice filled cooler boxes. Asbestos samples were sub-sampled in plastic zip-lock bags.

Soil samples for chemical analysis were collected in duplicate into tightly sealed plastic bags. The headspace air above each sample was measured using a Mini Rae 2000 Photoionisation Detector (PID) fitted with a 10.6eV lamp and calibrated with isobutylene gas at a concentration of 100ppm. This instrument allows rapid, semi quantitative analysis of ionisable volatile organic compounds in the soil. The results of the soil vapour testing are presented in Appendix D

7.2 Field Quality Control Procedures

The field quality control consisted of the following:

- Sampling was performed generally in accordance with the procedures outlined in Coffey relevant standard operating procedures, which are based on industry accepted protocols for environmental sampling. This was carried out by an experienced environmental scientist.
- Calibration of field instruments in accordance with manufacturer's instructions;
- Collection of samples in appropriately preserved sampling containers supplied by the contract laboratories;
- Duplicates from soil samples collected were split by taking small representative sub pieces and placing one piece in each jar until the jars had been filled to the appropriate capacity.
- Collection and analysis of three soil blind coded duplicate samples (two intra-laboratory duplicates and one inter-laboratory duplicate). These are summarised in Table 3 below;

- Carrying into the field a laboratory prepared trip spike (spiked with BTEX) and trip blank samples including despatch to the primary laboratory for analysis of volatile hydrocarbons to check the potential for cross contamination or loss of volatile contaminants during transport and sample preparation at the laboratory;
- Samples were transported in ice-cooled chests to the primary laboratory MGT Labmark (MGT) in Lane Cove, NSW who are NATA accredited for the analysis performed, under chain of custody conditions which are included in Appendix E. Inter-laboratory duplicates were sent to Envirolab Services (Envirolab) in Chatswood, NSW.

Table 3: Summary of Duplicate Soil Samples

Primary Sample ID	Duplicate Soil Sample ID	Duplicate Type		Analysis										
		Intra Laboratory	Inter Laboratory	TPH	BTEX	PAH	OCP/OPP	PCB	SVOC/VOC	Phenol	Alcohols	Methyl Acrylate	Metals	Asbestos
CTP06/0.0-0.2m	QC1	✓	-	✓	✓	✓	-	-	-	-	-	-	✓	-
CTP10/0.0-0.15m	QC11	-	✓	✓	-	-	-	-	-	-	-	-	✓	-
CTP1/0.0-0.1m	QC12	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-	-
Total		**2**	**1**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**-**
Total Primary Samples Analysed				**21**	**22**	**22**	**8**	**8**	**8**	**8**	**8**	**8**	**21**	**8**

7.3 Laboratory Analysis

As described in Section 5.2, soil samples collected at or near the surface in each test pit location were selected for analysis. Soil samples collected at depths below the surface were also selected for analysis based on the results of the PID screening and visual and olfactory evidence of potential contamination. The following analysis was undertaken on soil samples:

- 21 primary soil samples for total petroleum hydrocarbons (TPH), and metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
- 22 primary soil samples for benzene, toluene, ethylbenzene and xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAH);
- 8 primary soil samples for speciated phenols, Organochlorine pesticides (OCPs), Organophosphorus pesticides (OPPs), Polychlorinated biphenyls (PCB), asbestos, alcohols (methanol and ethanol), methyl acrylate, semi volatile and volatile organic compounds (SVOCs and VOCs); and

- Quality control samples including three duplicate soil samples, one set of trip blank and trip spike samples.

8 RESULTS OF FIELD AND LABORATORY INVESTIGATIONS

8.1 Generalised Subsurface Conditions

Logs of the test pits are included in Appendix C. The generalised subsurface conditions encountered across the site from the investigation locations are summarised below:

FILL (CEMENTED SLAG)

Both zones comprise a cemented blast furnace slag material as a hardstand pavement.

Zone 1: Sandy GRAVEL: fine to coarse grained gravels and sands, angular, black/dark grey with trace white, weakly to moderately cemented, encountered at all locations to a maximum depth of 0.8m (CTP01).

Zone 2: Clayey GRAVEL: fine to medium grained angular gravels, grey/pale brown with some white (near surface), moderately cemented, encountered at all locations (except CTP14) to a maximum depth of 0.3m (CTP07).

FILL (COALWASH)

Clayey GRAVEL/ Gravelly CLAY / Gravelly Sandy CLAY: Fine to coarse grained, black (shiny texture) gravels comprising mostly coalwash, low plasticity clays, with some sand, encountered in majority of test pits (within Zone 2 only) to depths ranging from 0.5m to 2.0m.

FILL (SLAG)

COBBLES and BOULDERS: various colours, sub angular to angular comprising mainly slag, encountered across both zones in test pits CTP03, CTP10, CTP11, CTP12 and CTP13 to depths ranging 1.0m to 2.3m.

FILL

Mixed layers of clays, sands and gravels: Fine to coarse grained sands and gravels, various plasticity clays, with various coloured cobbles and boulders comprising mainly slag and some silt. Inclusions of foreign materials were also noted in test pits CTP07, CTP09, CTP10, CTP11, CTP12 and CTP14, and included timber, metal objects (train brake pad, sheeting, pipe), PVC plastic, rubber, fabric cloth (hessian), brick, concrete and plastic packaging. Mixed fill layers were encountered in most test pits to depths ranging 0.8m (CTP05) to 3.0m. In CTP10, CTP12 and CTP14, mixed fill extended to the maximum depth of the test pits (i.e. 2.6m, 2.3m and 3.0m, respectively).

FILL / REWORKED ESTUARINE

Clayey SAND / SAND: medium grained, pale yellow, with some high plasticity dark brown clay and some white medium to coarse grained seashells. Encountered at most locations (except CTP10, CTP12 and CTP14) underlying mixed fill to maximum depth of test pit.

In CTP03, metal slag cobbles and gravels were observed from 2.4 to 3.0m. Cobbles were surrounded by dark red to orange stained sands.

It is unclear whether sands are natural or reworked. Based on Coffey's knowledge of the local area, the site is located in a former coastal lagoon, which undergone significant reworking in the mid to late 20th century to create the Inner Harbour, therefore it is possible that these sands were reworked from adjacent lagoon/dune/beach deposits or comprise dredged material.

In CTP10, CTP12 and CTP13, a distinct slag odour was noted in cobbly slag fill materials at depths between 0.6m to 2.3m. At all other locations, no unusual odours were noted during excavation or sampling.

No asbestos containing materials (ACM) were observed during sampling. Groundwater inflows were not observed during excavation of test pits. Based on the observed units, subsurface conditions encountered were generally consistent with the published soil landscape information.

8.2 Headspace Screening Results

Results of the soil vapour headspace measurements are presented in Appendix D.

Soil samples screened recorded negligible to moderate readings ranging between 0.0ppm and 208ppm. Low to moderate readings ranging from 30.8ppm to 208ppm were detected in CTP03 between 0.4m to 3.0m. No odours were observed during excavation of CTP03 and laboratory-tested soil samples reported volatile contaminants below the laboratory limit of reporting (LOR).

Based on field observations and laboratory results of samples collected within CTP03 at a similar interval (i.e. 1.0-1.2m), it is unlikely that volatile hydrocarbon contamination would be present at concentrations suggested by the PID. The PID is useful as a screening tool only, and can be susceptible to variations caused by moist soils and by rainfall (which intermittently occurred during field sampling). On this occasional it would appear that this PID reading represents a false positive.

All other locations recorded negligible to low readings ranging from 0.0ppm to 30.3ppm and are generally consistent with field observations and the laboratory-tested soil samples.

8.3 Laboratory Analysis Results

8.3.1 Quality Assurance/Quality Control

Coffey assessed the laboratory data against predetermined Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) (completeness, comparability, representativeness, precision, and accuracy) for both field and laboratory procedures and results. A data validation report was prepared by Coffey as part of the quality assurance programme and is included in Appendix F.

Based on our assessment, the following comments can be made regarding soil samples:

- The Certificates of Analysis for Batches 352482, 352720, 352721 and 352956 indicated that samples were extracted for analysis of methyl acrylates outside the recommended holding time by between 1 to 3 days. It is noted that the reported concentrations may be marginally less than what is actually present.

  Given that the samples were appropriately preserved during transit, should elevated concentrations of acrylate be currently present within the soil at locations tested, this would be likely to be reflected to some degree in the laboratory results. As it is, all samples recorded acrylate concentrations less than the laboratory limit of reporting. This is further supported by field observations – methyl acrylate commonly gives off a distinctive acrid, bitter odour (US EPA, 1987) which was not detected during fieldwork.

  Methyl acrylates, other than being used in transesterification processes, are also associated with use in leatherworks, textile and paper manufacturing, and was also historically used to produce acrylic fibres and plastic bottles (US EPA, 1987). Based on our knowledge of the site history, it is unlikely that any of these processes occurred on-site. Based on the above lines of evidence, it is considered unlikely that there is methyl acrylates currently present at elevated concentrations on the site.

The QA/QC results indicate that the laboratory data is useable and adequately represents concentrations of contaminants at the sampling locations.

8.3.2 Comparison of Results to Soil Investigation Levels

The laboratory test results for soil samples analysed are summarised in Table LR1. Laboratory reports are included in Appendix E. The reported concentrations recorded no exceedences of the adopted SILs. Furthermore, the following was noted:

- A single sample CTP14/0.0-0.05m recorded an elevated concentration of TPH C_{10}-C_{36} of 940mg/kg, which was is marginally below the adopted SIL concentration of 1000mg/kg;
- Detectable concentrations of TPH C_6-C_{36}, PAHs and heavy metals were reported in some samples, however at concentrations well below the laboratory LOR and/or adopted SILs; and
- Concentrations of remaining contaminants of concern were less than the laboratory LOR.

9 CONCLUSIONS AND RECOMMENDATIONS

The results of this preliminary baseline contamination assessment identified that existing levels of chemical contaminants were below the adopted soil investigation levels for industrial/commercial landuse at the locations tested.

The soil samples collected from the site are considered to provide an indication of the baseline conditions at the time of testing. Future assessments also need to take into consideration the actual type of activities, location of activities and products/chemicals/wastes stored and generated during future operations which may change from those presented in this report.

10 LIMITATIONS

The findings contained in this report are the result of discrete/specific methodologies used in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the parts of the site assessed at the time the investigations were carried out.

In preparing this preliminary baseline contamination assessment we have relied on third party information contained within the Environmental Assessment and information provided by PKPC. Coffey, in good faith has accepted that the information provided is true and accurate.

Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points. This report is intended to provide baseline chemical information regarding at the chosen locations at the time of the investigation. This report does not provide geotechnical and groundwater information.

11 REFERENCES

1. ANZECC (2001) Australian Water Quality Guidelines for Fresh and Marine Waters
2. NEPC (1999), National Environment Protection (Assessment of Site Contamination) Measure
3. Maunsell (2008). Environmental Assessment. Soybean Processing and Biodiesel Production Facility, National Biodiesel Pty Ltd. Report number 60042651, dated 5 December 2008.
4. NSW Department of Mineral Resources (1974) Wollongong 1: 50,000 Geological Sheet (Sheet No. 9029-11).
5. Soil Conservation Service of NSW (1990) Wollongong-Port hacking 1: 100,000 Soil Landscape Series Sheet (Sheet No. 9029-9129)
6. NSW EPA (1994), Guidelines for Assessing Service Station Sites;
7. NSW EPA (1995), Sampling Design Guidelines;
8. NSW OEH (2011), Guidelines for Consultants Reporting on Contaminated Sites;
9. NSW DEC (2006), Guidelines for the NSW Auditor Scheme 2nd Ed;
10. URS (2008), National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW, dated 25 September 2008, Report Number 43217865
11. US EPA (1987). Health and Environmental Effects Profile for Metyl Acrylate. PB 89120547. June 1987.

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Important information about Coffey Environmental Report

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

Your report has been written for a specific purpose

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

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

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

Scope of Investigations

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

Subsurface conditions can change Interpretation of factual data

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

Interpretation of factual data

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

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Your report will only give preliminary recommendations

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

Your report is prepared for specific purposes and persons

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

Interpretation by other professionals

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

Data should not be separated from the report

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

Contact Coffey for additional assistance

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

Responsibility

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

Tables

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla

TABLE LR1:

SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES

Heavy Metals, TPH, BTEX, PAH, OCP, OPP, PCB, VOCs, SVOCs, Asbestos, Phenols, Alcohols and Methyl Acrylate

(All results in mg/kg)

Sample ID	THRESHOLD CONCENTRATIONS	CTP01	CTP02	CTP03	CTP03	CTP03	CTP04	CTP04	CTP05	CTP06	QC1 (Intra-laboratory duplicate of CTP06/0.0-0.2m)	CTP07	CTP08	CTP08	CTP09
Media		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date of Sampling	HIL (NEHF F)	18-Sep-12	18-Sep-12	17-Sep-12	17-Sep-12	17-Sep-12	17-Sep-12	17-Sep-12	17-Sep-12	17-Sep-12	17-Sep-12	19-Sep-12	19-Sep-12	19-Sep-12	19-Sep-12
Soil Type		FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL
Depth (m)		0.0-0.2	0.0-0.1	0.0-0.1	0.4-0.6	1.0-1.2	0.0-0.1	0.6-0.8	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.05	0.0-0.1	1.0-1.2	0.0-0.1
HEAVY METALS															
Arsenic	500 [1]	2.7	4.2	11	-	2.3	3.4	14	8.4	4.8	6.4	8.7	4	2.7	14
Cadmium	100 [1]	0.6	0.6	0.5	-	< 0.1	0.3	0.2	0.4	0.3	0.4	< 0.1	0.2	0.2	0.3
Chromium	600,000 [1a]	670	690	570	-	5.3	430	12	87	580	750	6.3	< 2	< 2	< 2
Copper	5,000 [1]	6.2	5	3.6	-	20	6.3	15	58	3.4	2.3	< 2	< 2	20	< 2
Lead	3,000 [1]	11	8.1	5.3	-	27	6.3	26	71	5	5.8	2.1	3.8	21	< 2
Mercury	75 [1b]	< 0.05	< 0.05	< 0.05	-	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.14	< 0.05
Nickel	1,500 [1]	20	17	12	-	5.9	14	5.7	8.3	14	14	< 1	< 1	3.3	1.3
Zinc	35,000 [1]	61	63	48	-	36	60	94	480	52	62	< 5	< 5	33	6.1
TOTAL PETROLEUM HYDROCARBONS															
C6 - C9 Fraction	65 [2]	< 10	< 10	< 10	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
C10 - C14 Fraction		62	110	110	-	< 50	< 50	< 50	< 50	64	85	< 50	< 50	< 50	< 50
C15 - C28 Fraction		< 100	< 100	< 100	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
C29 - C36 Fraction		< 100	< 100	< 100	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Total C10-C36	1,000 [2]	< 100	110	110	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
BTEX															
Benzene	1 [2]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	130 [2]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	50 [2]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Xylene	25 [2]	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
POLYCYCLIC AROMATIC HYDROCARBONS															
Benzo(a)pyrene	5 [1]	< 0.5	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH	100 [1]	< 1	< 1	< 1	1.3	<1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.3	< 1
VOLATILE ORGANIC COMPOUNDS		-	<LOR	-	1.3	<LOR	-	-	-	-	-	-	<LOR	-	<LOR
SEMI VOLATILE ORGANIC COMPOUNDS		-	<LOR	-	<LOR	<LOR	-	-	-	-	-	-	<LOR	-	<LOR
ORGANOCHLORINE PESTICIDES															
Heptachlor	50 [1]	-	<0.5	-	<0.5	<0.5	-	-	-	-	-	-	<0.5	-	<0.5
Aldrin + Dieldrin	50 [1]	-	<LOR	-	<LOR	<LOR	-	-	-	-	-	-	<LOR	-	<LOR
DDT + DDE + DDD	1,000 [1]	-	<LOR	-	<LOR	<LOR	-	-	-	-	-	-	<LOR	-	<LOR
Other OCP		-	<LOR	-	<LOR	<LOR	-	-	-	-	-	-	<LOR	-	<LOR
ORGANOPHOSPHOROUS PESTICIDES															
Total OPP	-	-	<LOR	-	<LOR	<LOR	-	-	-	-	-	-	<LOR	-	<LOR
POLYCHLORINATED BIPHENYLS															
Total PCB	50 [1]	-	-	-	< 0.5	< 0.5	-	-	-	-	-	-	< 0.5	-	< 0.5
ASBESTOS	ND [3]	-	ND	-	-	ND	ND	-	-	-	-	-	-	-	ND
PHENOL	42,500 [1]	-	< 0.5	-	< 0.5	< 0.5	-	-	-	-	-	-	< 0.5	-	< 0.5
ALCOHOLS															
Methanol		-	<10	-	<10	<10	-	-	-	-	-	-	<10	-	<10
Ethanol		-	<10	-	<10	<10	-	-	-	-	-	-	<10	-	<10
Other Alcohols		-	<LOR	-	<LOR	<LOR	-	-	-	-	-	-	<LOR	-	<LOR
METHYL ACRYLATE		-	<20	-	<20	<20	-	-	-	-	-	-	<20	-	<20

NOTES:

Bold Concentration exceeds the Human Health Investigation Levels (HIL).

[1] Based on NSW DEC (2006), Guidelines for the NSW Site Auditor Scheme 2nd Edition and NEPM (1999). NEHF F Commercial / Industrial

[a] Based on Chromium III

[b] Based on Inorganic Mercury

[2] Based on NSW EPA (1994), Guidelines for Assessing Service Station Sites

[3] On the advice of the NSW Department of Health, the NSW EPA have advised NSW Site Auditors (Site Auditors Meeting 1 March 2000) that "no asbestos in the soil at the surface is permitted". The phrase 'at the surface' has not been defined.

ND Not Detected

` Not Analysed

LOR Limits of Reporting

See original laboratory reports for detection limits

TABLE LR1:

SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES

Heavy Metals, TPH, BTEX, PAH, OCP, OPP, PCB, VOCs, SVOCs, Asbestos, Phenols, Alcohols and Methyl Acrylate

(All results in mg/kg)

Sample ID	THRESHOLD CONCENTRATIONS	CTP09	CTP09	CTP 10	QC11 (Inter-laboratory duplicate of CTP10/0.0-0.15m)	CTP10	CTP11	QC12 (Intra-laboratory duplicate of CTP11/0.0-0.1m)	CTP11	CTP12	CTP12	CTP12	CTP13	CTP13	CTP14
Media		Soil	Fragment	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date of Sampling	HIL (NEHF F)	19-Sep-12	19-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	20-Sep-12	18-Sep-12
Soil Type		FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL
Depth (m)		0.9-1.0	0.9-1.0 ACM	0.0-0.15	0.0-0.15	2.2-2.4	0.0-0.1	0.0-0.1	0.6-0.8	0.0-0.1	0.3-0.5	0.6-0.7	0.0-0.1	1.0-1.3	0.0-0.05
HEAVY METALS															
Arsenic	500 [1]	-	-	1.7	<4	1.7	5.3	-	4.1	3.8	< 1	-	1.3	4.4	5.9
Cadmium	100 [1]	-	-	< 0.1	<0.5	0.2	< 0.1	-	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	0.5
Chromium	600,000 [1a]	-	-	4.7	2	9.6	6.6	-	14	4.4	13	-	4.7	27	120
Copper	5,000 [1]	-	-	< 2	1	98	< 2	-	55	< 2	27	-	< 2	25	66
Lead	3,000 [1]	-	-	2.6	<1	13	< 2	-	14	< 2	14	-	2.8	7.3	9.3
Mercury	75 [1b]	-	-	< 0.05	<0.1	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05
Nickel	1,500 [1]	-	-	2.9	<1	6.9	1.1	-	9.1	1.1	5.7	-	2.2	3.9	17
Zinc	35,000 [1]	-	-	< 5	4	44	< 5	-	300	< 5	88	-	< 5	37	83
TOTAL PETROLEUM HYDROCARBONS															
C6 - C9 Fraction	65 [2]	-	-	< 10	<25	< 10	< 10	-	< 10	< 10	< 10	-	< 10	< 10	< 10
C10 - C14 Fraction		-	-	< 50	<50	< 50	< 50	-	< 50	< 50	< 50	-	< 50	< 50	97
C15 - C28 Fraction		-	-	< 100	<100	< 100	< 100	-	< 100	< 100	< 100	-	< 100	< 100	570
C29 - C36 Fraction		-	-	< 100	<100	< 100	< 100	-	< 100	< 100	< 100	-	< 100	< 100	270
Total C10-C36	1,000 [2]	-	-	< 100	<LOR	< 100	< 100	-	< 100	< 100	< 100	-	< 100	< 100	940
BTEX															
Benzene	1 [2]	-	-	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Toluene	130 [2]	-	-	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Ethylbenzene	50 [2]	-	-	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Total Xylene	25 [2]	-	-	< 1.5	-	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	-	< 1.5	< 1.5	< 1.5
POLYCYCLIC AROMATIC HYDROCARBONS															
Benzo(a)pyrene	5 [1]	-	-	< 0.5	-	< 0.5	< 0.5	< 0.5	2	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH	100 [1]	-	-	< 1	-	< 1	< 1	< 1	24	< 1	-	3.5	< 1	< 1	9
VOLATILE ORGANIC COMPOUNDS		-	-	-	-	-	<LOR	<LOR	-	<LOR	-	-	<LOR	-	-
SEMI VOLATILE ORGANIC COMPOUNDS		-	-	-	-	-	<LOR	<LOR	-	<LOR	-	-	<LOR	-	-
ORGANOCHLORINE PESTICIDES															
Heptachlor	50 [1]	-	-	-	-	-	<0.5	<0.5	-	<0.5	-	-	<0.5	-	-
Aldrin + Dieldrin	50 [1]	-	-	-	-	-	<LOR	<LOR	-	<LOR	-	-	<LOR	-	-
DDT + DDE + DDD	1,000 [1]	-	-	-	-	-	<LOR	<LOR	-	<LOR	-	-	<LOR	-	-
Other OCP		-	-	-	-	-	<LOR	<LOR	-	<LOR	-	-	<LOR	-	-
ORGANOPHOSPHOROUS PESTICIDES															
Total OPP	-	-	-	-	-	-	<LOR	<LOR	-	<LOR	-	-	<LOR	-	-
POLYCHLORINATED BIPHENYLS															
Total PCB	50 [1]	-	-	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	-	-	< 0.5	-	-
ASBESTOS	ND [3]	ND	ND	-	-	-	-	-	ND	-	ND	-	-	-	-
PHENOL	42,500 [1]	-	-	-	-	-	< 0.5	< 0.5	-	< 0.5	-	-	< 0.5	-	-
ALCOHOLS															
Methanol		-	-	-	-	-	<10	<10	-	<10	-	-	<10	-	-
Ethanol		-	-	-	-	-	<10	<10	-	<10	-	-	<10	-	-
Other Alcohols		-	-	-	-	-	<LOR	<LOR	-	<LOR	-	-	<LOR	-	-
METHYL ACRYLATE		-	-	-	-	-	< 20	< 20	-	< 20	-	-	< 20	-	-

NOTES:

Bold Concentration exceeds the Human Health Investigation Levels (HIL).

[1] Based on NSW DEC (2006), Guidelines for the NSW Site Auditor Scheme 2nd Edition and NEPM (1999). NEHF F Commercial / Industrial

[a] Based on Chromium III

[b] Based on Inorganic Mercury

[2] Based on NSW EPA (1994), Guidelines for Assessing Service Station Sites

[3] On the advice of the NSW Department of Health, the NSW EPA have advised NSW Site Auditors (Site Auditors Meeting 1 March 2000) that "no asbestos in the soil at the surface is permitted". The phrase 'at the surface' has not been defined.

ND Not Detected

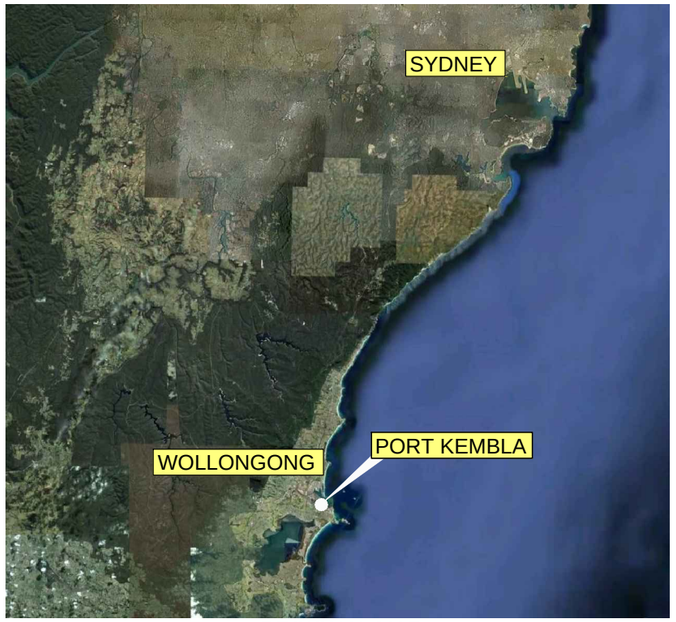
` Not Analysed

LOR Limits of Reporting

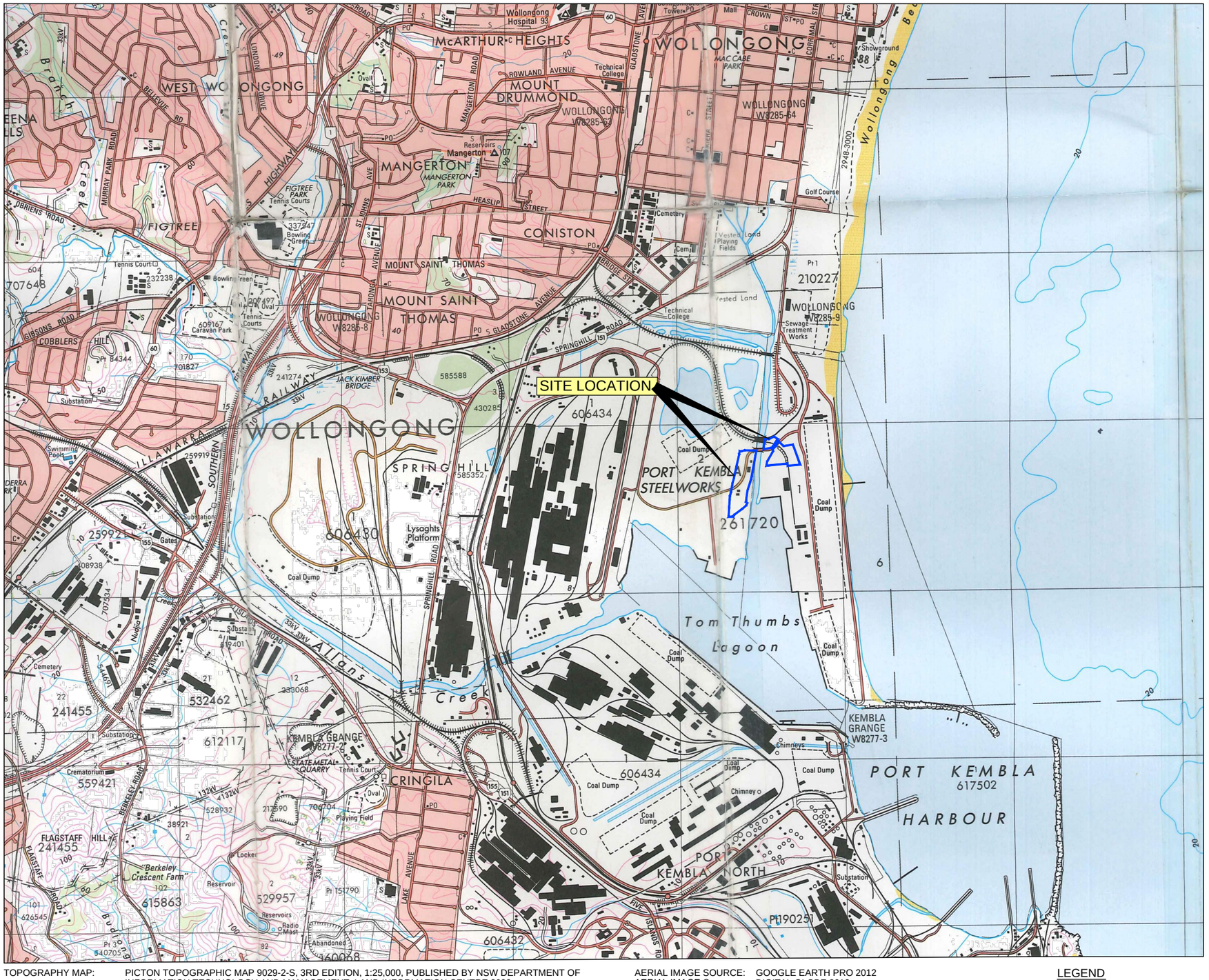
See original laboratory reports for detection limits

Figures

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla



REGIONAL MAP
(NOT TO SCALE)



TOPOGRAPHY MAP: PICTON TOPOGRAPHIC MAP 9029-2-S, 3RD EDITION, 1:25,000, PUBLISHED BY NSW DEPARTMENT OF INFORMATION TECHNOLOGY AND MANAGEMENT, LAND INFORMATION CENTRE 2000

AERIAL IMAGE SOURCE: GOOGLE EARTH PRO 2012
AERIAL IMAGE ©: DIGITAL GLOBE 2012
GEOEYE 2012
SINCLAIR KNIGHT MERZ 2012
DATA SIO, NOAA, U.S. NAVY, NGA, GEBCO

LEGEND
SITE BOUNDARY

0 250 500 750 1,000 1,250
SCALE 1:25000 (A3) METRES

drawn	CGT
approved	MF
date	11.10.2012
scale	AS SHOWN
original size	**A3**

coffey environments
SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

client: PORT KEMBLA PORT CORPORATION

project: PRELIMINARY BASELINE CONTAMINATION ASSESSMENT
INNER HARBOUR, PORT KEMBLA, NSW

title: SITE LOCALITY PLAN

job no: ENAUWOLL04107AA-R01

figure no: 1

LEGEND

APPROXIMATE INVESTIGATION BOUNDARY

0 17.5 35 52.5 70 87.5

SCALE 1:1750 (A3) METRES

Sources:
AERIAL IMAGE SOURCE: Nearmap, 17/07/2012
AERIAL IMAGE ©: Nearmap.com
Aerial photo obtained from Nearmap and has been shown for clarity of plan.

drawn	CGT
approved	MF
date	11.10.2012
scale	AS SHOWN
original size	**A3**

coffey environments
SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

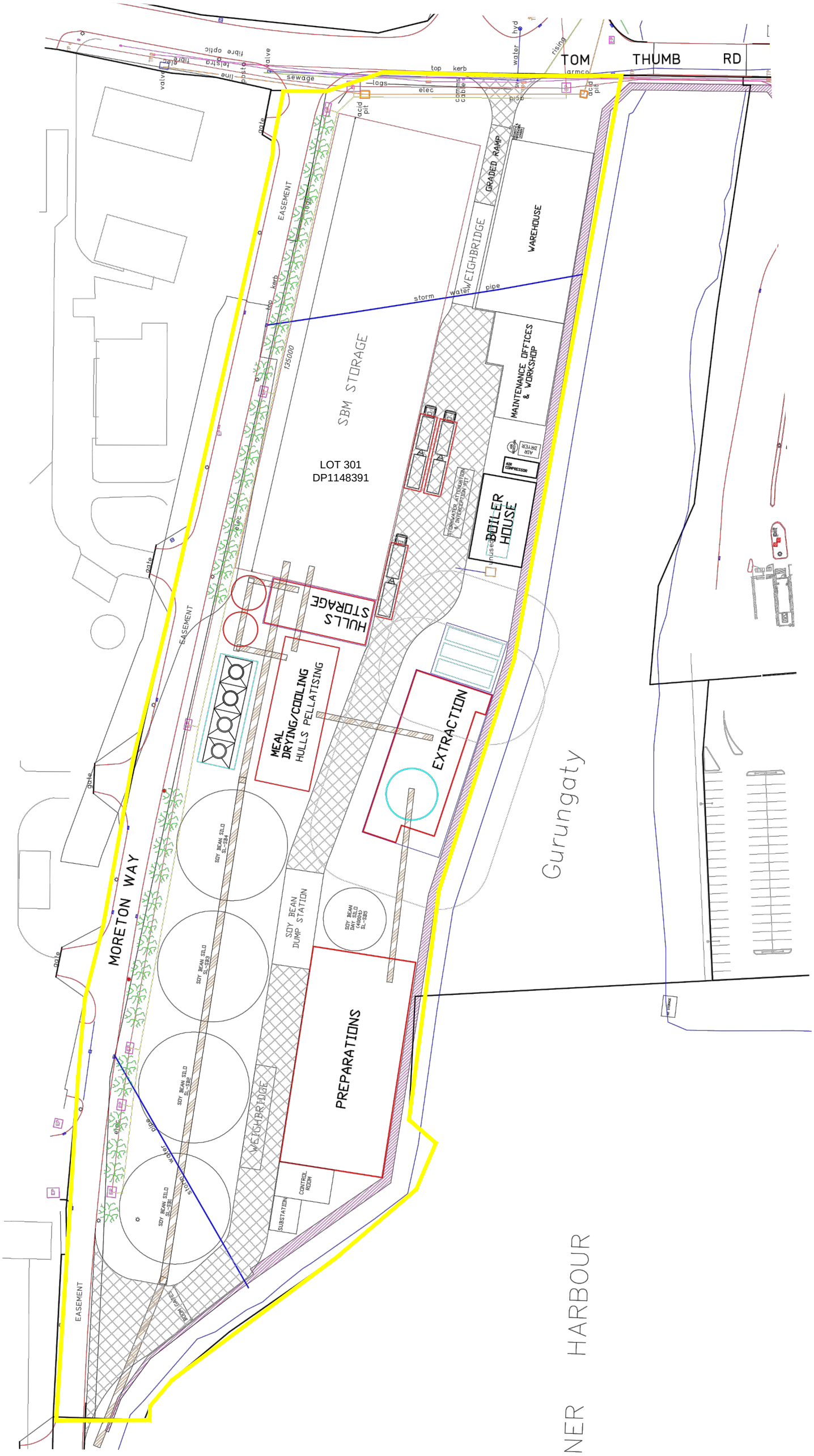
client: PORT KEMBLA PORT CORPORATION

project: PRELIMINARY BASELINE CONTAMINATION ASSESSMENT
INNER HARBOUR, PORT KEMBLA, NSW

title: SITE LAYOUT

job no: ENAUWOLL04107AA-R01

figure no: 2



LEGEND

APPROXIMATE INVESTIGATION BOUNDARY

0 12.5 25 37.5 50 62.5

SCALE 1:1250 (A3) METRES

Sources:
IMAGE SOURCE: National Biodiesel Pty Ltd,
Soy Bean Crushing Facility Concept Layout,
dwg No. PK-021-01-0001, 20/06/2012

drawn	CGT
approved	MF
date	11.10.2012
scale	AS SHOWN
original size	**A3**

coffey environments
SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

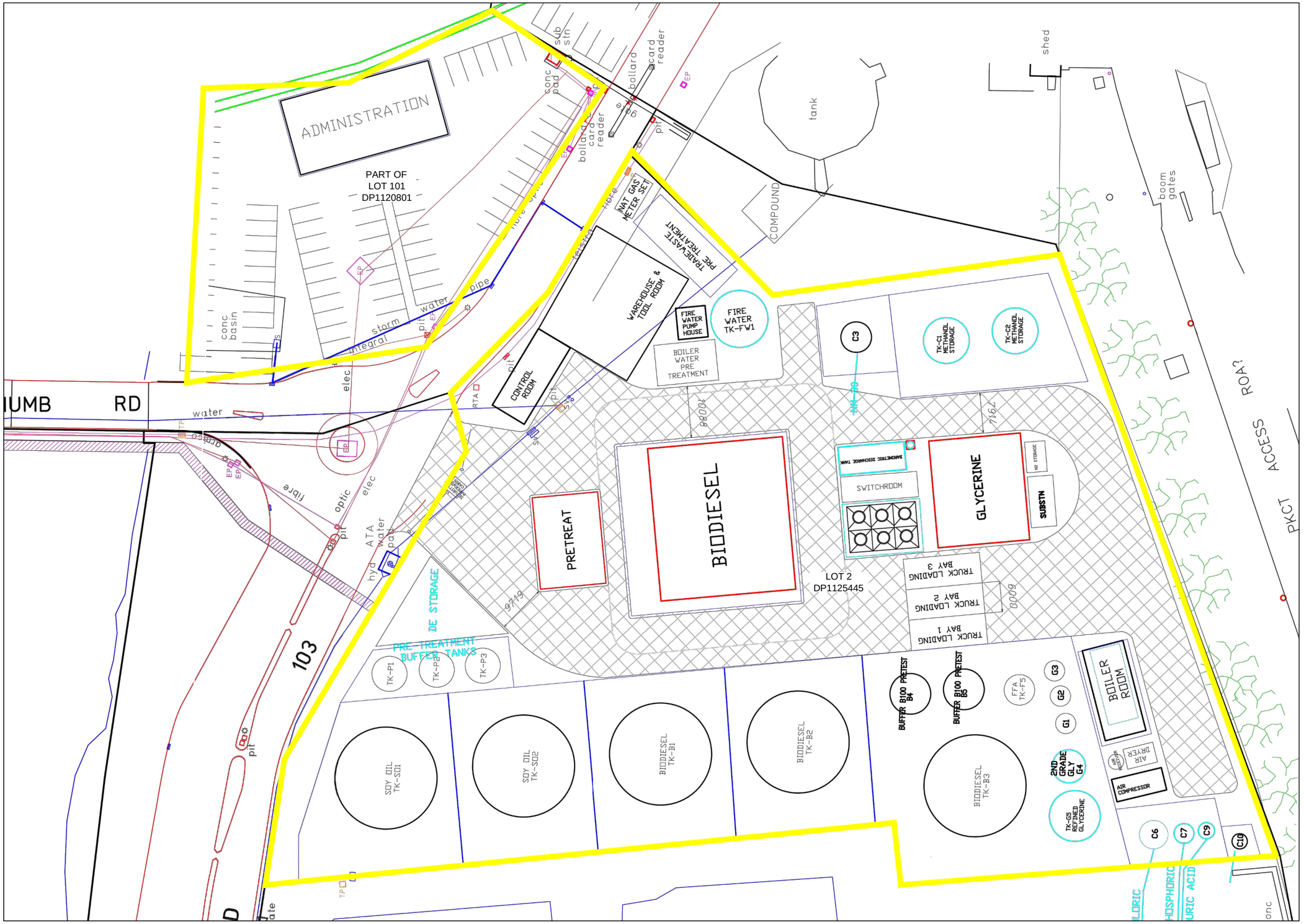
client: PORT KEMBLA PORT CORPORATION

project: PRELIMINARY BASELINE CONTAMINATION ASSESSMENT
INNER HARBOUR, PORT KEMBLA, NSW

title: PROPOSED BIODIESEL INSTALLATIONS - ZONE 1

job no: ENAUWOLL04107AA-R01

figure no: 3A



LEGEND

APPROXIMATE INVESTIGATION BOUNDARY

DRAFT

0 7.5 15 22.5 30 37.5

SCALE 1:750 (A3) METRES

Sources:
IMAGE SOURCE: National Biodiesel Pty Ltd,
Biodiesel Refinery Concept Layout,
dwg No. PK-03-01-0001, 20/06/2012

drawn	
approved	
date	
scale	
original size	A3

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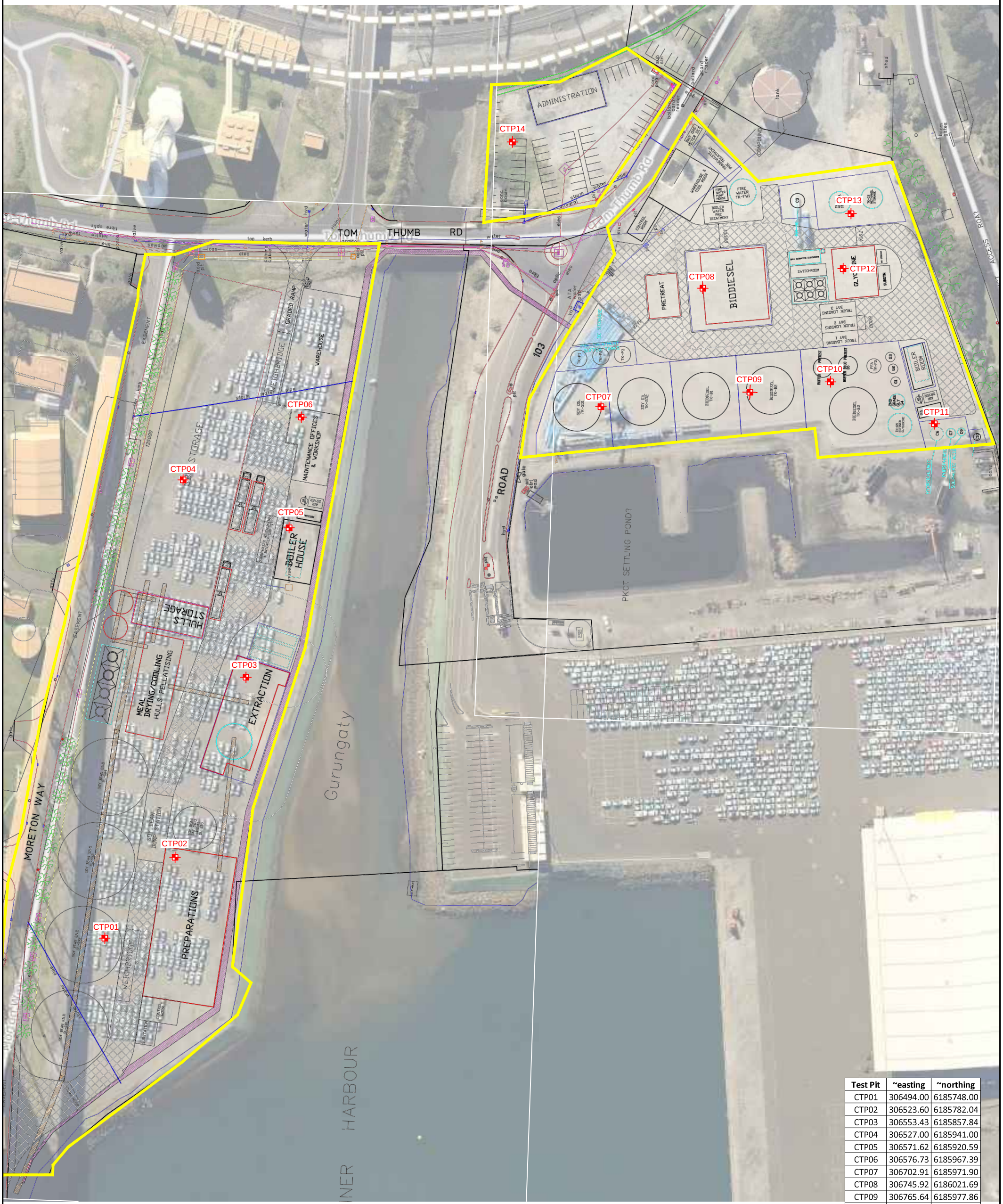
SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

client:	PORT KEMBLA PORT CORPORATION
project:	PRELIMINARY BASELINE CONTAMINATION ASSESSMENT INNER HARBOUR, PORT KEMBLA, NSW
title:	PROPOSED BIODIESEL INSTALLATIONS - ZONE 2
job no:	ENAUWOLL04107AA-R01
figure no:	3B



Test Pit	~easting	~northing
CTP01	306494.00	6185748.00
CTP02	306523.60	6185782.04
CTP03	306553.43	6185857.84
CTP04	306527.00	6185941.00
CTP05	306571.62	6185920.59
CTP06	306576.73	6185967.39
CTP07	306702.91	6185971.90
CTP08	306745.92	6186021.69
CTP09	306765.64	6185977.86
CTP10	306799.57	6185982.26
CTP11	306843.44	6185964.56
CTP12	306805.17	6186029.93
CTP13	306808.05	6186053.25
CTP14	306665.68	6186083.29

LEGEND

CTP APPROXIMATE TEST PIT LOCATIONS

APPROXIMATE INVESTIGATION BOUNDARY

0 15 30 45 60 75

SCALE 1:1500 (A3) METRES

Sources:
AERIAL IMAGE SOURCE: Nearmap, 17/07/2012
AERIAL IMAGE ©: Nearmap.com
Aerial photo obtained from Nearmap and has been shown for clarity of plan.

IMAGE SOURCE: National Biodiesel Pty Ltd, Biodiesel Refinery Concept Layout, dwg No. PK-03-01-0001, 20/06/2012
IMAGE SOURCE: National Biodiesel Pty Ltd, Soy Bean Crushing Facility Concept Layout, dwg No. PK-021-01-0001, 20/06/2012

drawn	CGT
approved	MF
date	11.10.2012
scale	AS SHOWN
original size	**A3**

coffey environments
SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

client: PORT KEMBLA PORT CORPORATION

project: PRELIMINARY BASELINE CONTAMINATION ASSESSMENT INNER HARBOUR, PORT KEMBLA, NSW

title: APPROXIMATE LOCATION OF SAMPLES

job no: ENAUWOLL04107AA-R01

figure no: 4

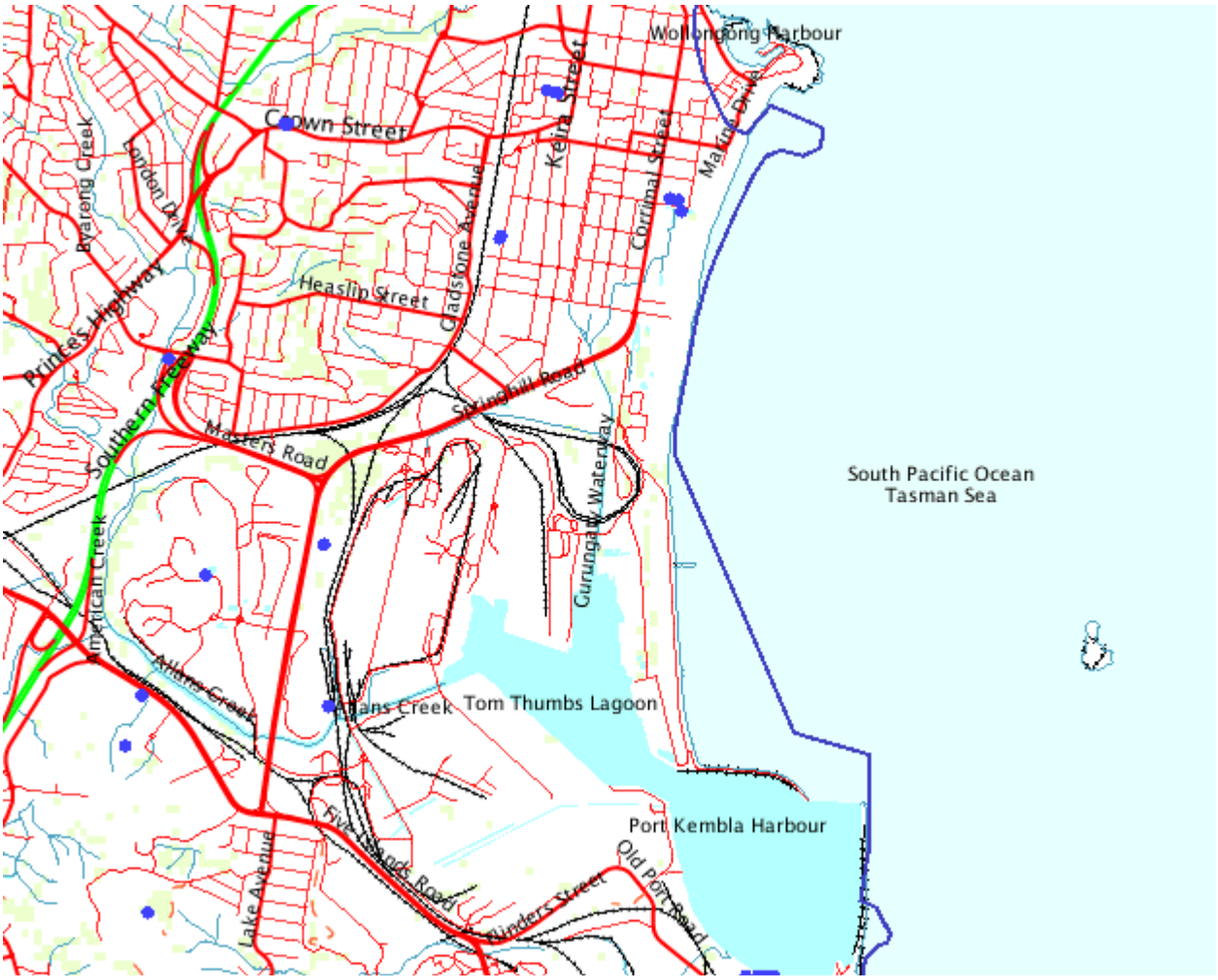
Appendix A
Groundwater Bore Search Results

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla

Map from the NSW Natural Resource Atlas

Map created with NSW Natural Resource Atlas - http://www.nratlas.nsw.gov.au

Thursday, October 04, 2012



0 7 Km

Legend

Symbol	Layer	Custodian
	Cities and large towns renderImage: Cannot build image from features	
Cowra	Populated places renderImage: Cannot build image from features	
	Towns	
	Groundwater Bores	
	Catchment Management Authority boundaries	
	Major rivers	
	Topographic base map	

Appendix B
Site Photographs

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla

Photo 1: Looking east from the western site boundary across Zone 1

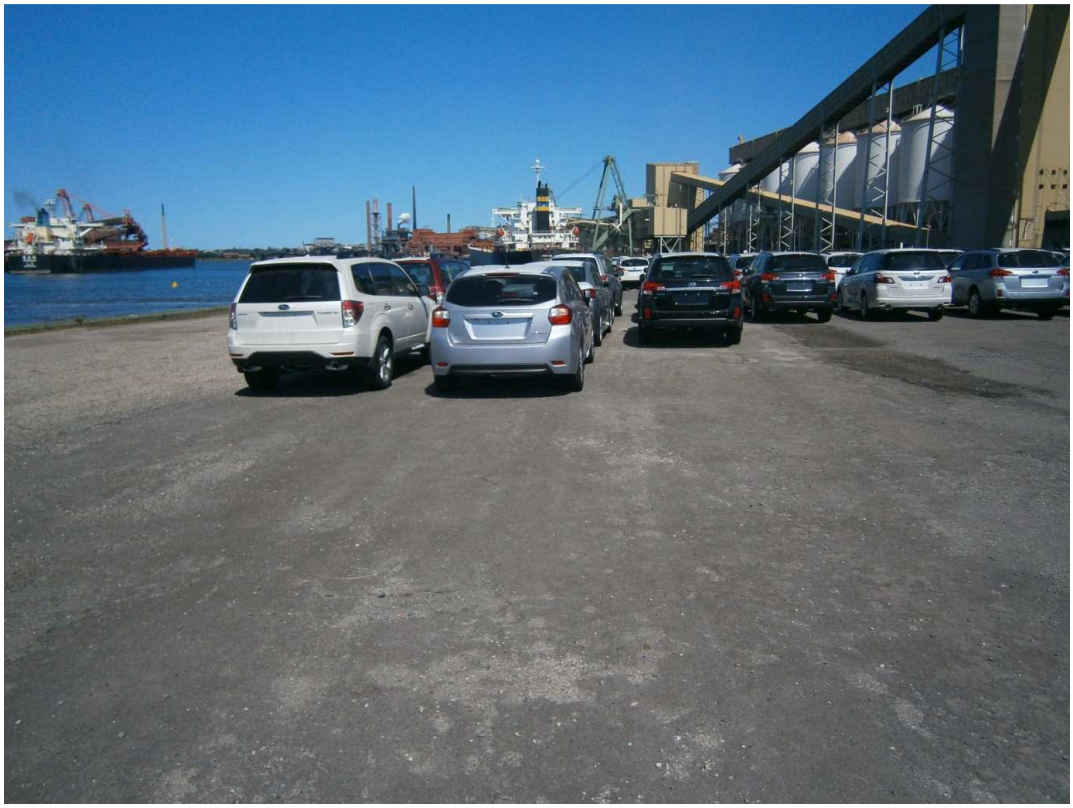


Photo 2: Looking south across parked vehicles occupying Zone 1

Photo 3: Looking south-east across larger portion of Zone 2

Photo 4: Looking north-east across Zone 2 (North of Tom Thumb Road)

Photo 5: Railway sleeper piles observed in north-west portion of Zone 2

Photo 6: Concrete basin between Tom Thumb Road and southern area of Zone 2

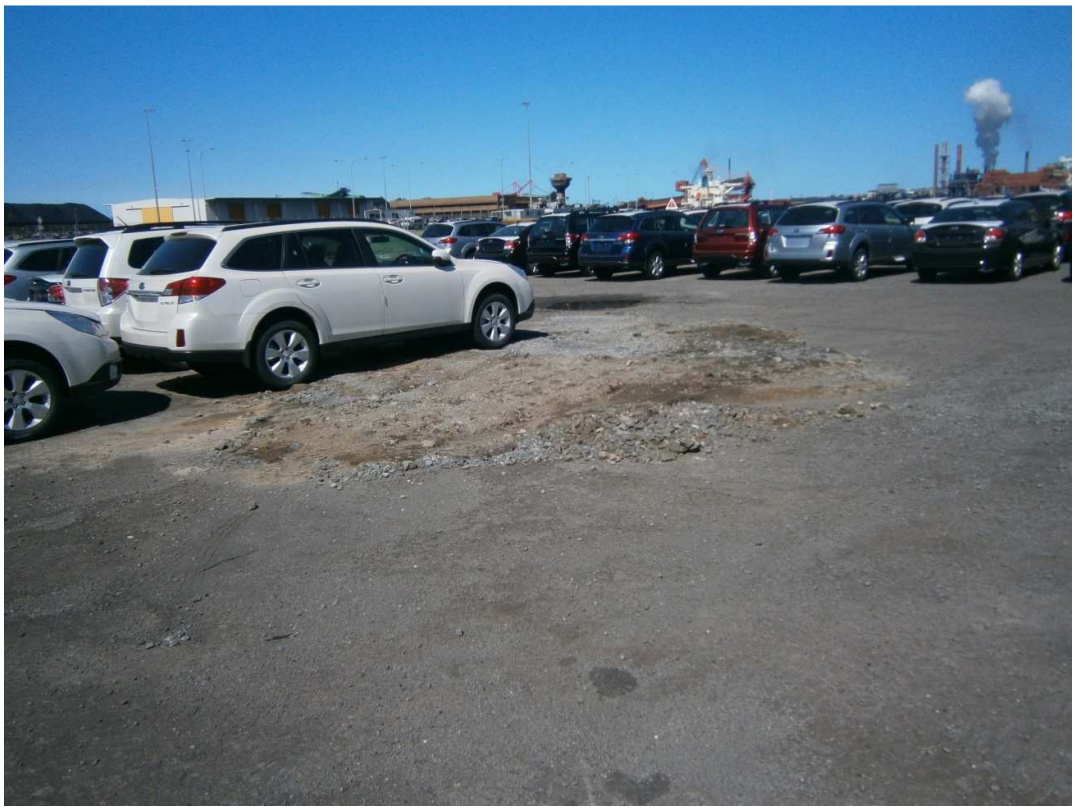


Photo 7: Soil disturbance (former test pit) on ground surface in Zone 1

Photo 8: Looking north west from the eastern portion of Zone 2.

Photo 9: Looking east across the southern boundary of Zone 2 showing raised fill terrain

Photo 10: Looking south-east from the southern portion of Zone 2 across to Port Kembla Coal Terminal settlement ponds

Photo 11: Test pit CTP01 (in Zone 1) after recompaction with backfill soils

Appendix C
Test Pit Logs with explanations sheets

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla

coffey

Soil Description Explanation Sheet (1 of 2)

DEFINITION:

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

CLASSIFICATION SYMBOL & SOIL NAME

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

PARTICLE SIZE DESCRIPTIVE TERMS

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

MOISTURE CONDITION

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

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

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

CONSISTENCY OF COHESIVE SOILS

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

DENSITY OF GRANULAR SOILS

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

MINOR COMPONENTS

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

SOIL STRUCTURE

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

GEOLOGICAL ORIGIN

WEATHERED IN PLACE SOILS

Extremely weathered material	Structure and fabric of parent rock visible.
Residual soil	Structure and fabric of parent rock not visible.

TRANSPORTED SOILS

Aeolian soil	Deposited by wind.
Alluvial soil	Deposited by streams and rivers.
Colluvial soil	Deposited on slopes (transported downslope by gravity).
Fill	Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.
Lacustrine soil	Deposited by lakes.
Marine soil	Deposited in ocean basins, bays, beaches and estuaries.

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Soil Description Explanation Sheet (2 of 2)

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60 mm and basing fractions on estimated mass)								USC	PRIMARY NAME
COARSE GRAINED SOILS More than 50% of materials less than 63 mm is larger than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	GRAVELS More than half of coarse fraction is larger than 2.36 mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.				GW	GRAVEL
				Predominantly one size or a range of sizes with more intermediate sizes missing.				GP	GRAVEL
			GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)				GM	SILTY GRAVEL
				Plastic fines (for identification procedures see CL below)				GC	CLAYEY GRAVEL
		SANDS More than half of coarse fraction is smaller than 2.36 mm	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate sizes				SW	SAND
				Predominantly one size or a range of sizes with some intermediate sizes missing.				SP	SAND
			SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).				SM	SILTY SAND
				Plastic fines (for identification procedures see CL below).				SC	CLAYEY SAND
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm			IDENTIFICATION PROCEDURES ON FRACTIONS <0.2 mm.						
				DRY STRENGTH	**DILATANCY**	**TOUGHNESS**			
		SILTS & CLAYS Liquid limit less than 50		None to Low	Quick to slow	None		ML	SILT
				Medium to High	None	Medium		CL	CLAY
				Low to medium	Slow to very slow	Low		OL	ORGANIC SILT
		SILTS & CLAYS Liquid limit greater than 50		Low to medium	Slow to very slow	Low to medium		MH	SILT
				High	None	High		CH	CLAY
				Medium to High	None	Low to medium		OH	ORGANIC CLAY
HIGHLY ORGANIC SOILS			Readily identified by colour, odour, spongy feel and frequently by fibrous texture.					Pt	PEAT

• Low plasticity – Liquid Limit w_L less than 35%. • Medium plasticity – w_L between 35% and 50%. • High plasticity – w_L greater than 50%.

COMMON DEFECTS IN SOIL

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

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

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Rock Description Explanation Sheet (1 of 2)

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

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

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

SUBSTANCE DESCRIPTIVE TERMS:

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

CLASSIFICATION OF WEATHERING PRODUCTS

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

Notes on Weathering:

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

ROCK SUBSTANCE STRENGTH TERMS

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

Notes on Rock Substance Strength:

1. In anisotropic rocks the field guide to strength applies to the strength perpendicular to the anisotropy. High strength anisotropic rocks may break readily parallel to the planar anisotropy.
2. The term "extremely low" is not used as a rock substance strength term. While the term is used in AS1726-1993, the field guide therein makes it clear that materials in that strength range are soils in engineering terms.
3. The unconfined compressive strength for isotropic rocks (and anisotropic rocks which fall across the planar anisotropy) is typically 10 to 25 times the point load index $I_{s(50)}$. The ratio may vary for different rock types. Lower strength rocks often have lower ratios than higher strength rocks.

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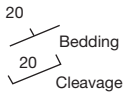
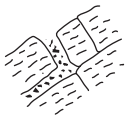
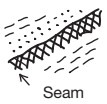
Rock Description Explanation Sheet (2 of 2)

COMMON DEFECTS IN ROCK MASSES Term	Definition	Diagram	Map Symbol	Graphic Log (Note 1)
Parting	A surface or crack across which the rock has little or no tensile strength. Parallel or sub parallel to layering (eg bedding) or a planar anisotropy in the rock substance (eg, cleavage). May be open or closed.			 (Note 2)
Joint	A surface or crack across which the rock has little or no tensile strength. but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.			 (Note 2)
Sheared Zone (Note 3)	Zone of rock substance with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge shaped blocks.			
Sheared Surface (Note 3)	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.			
Crushed Seam (Note 3)	Seam with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock substance which may be more weathered than the host rock. The seam has soil properties.			
Infilled Seam	Seam of soil substance usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1mm thick may be described as veneer or coating on joint surface.			
Extremely Weathered Seam	Seam of soil substance, often with gradational boundaries. Formad by weathering of the rock substance in place.			

Notes on Defects:

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

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

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

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

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

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

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Engineering Log - Excavation

Excavation No. ***CTP01***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***18.9.2012***

Principal: Date completed: ***18.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306494 m R.L. Surface:

excavation dimensions: 3m long 2m wide Northing: 6185748 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Sandy GRAVEL:** Fine to coarse grained, angular, black/dark grey with a trace of white, sand is fine to coarse grained.	D	VD		FILL (CEMENTED SLAG) Moderately cemented Weakly cemented from 0.1m No odour
				E									
				E		1.0			**FILL; Cobbly Gravelly SAND:** Fine to coarse grained, dark brown, cobbles 60-200mm, angular (slag), gravel is fine to coarse grained, sub rounded to sub angular (slag) with a trace of foreign materials (brick fragments, plastic).	M			FILL (SLAG) Slow excavator progress on moderately cemented slag No odour
						1.5			**FILL; Clayey SAND:** Medium plasticity, fine to medium grained, brown. **FILL; SAND:** Fine to medium grained, pale yellow, with a trace of clay, high plasticity, dark brown (in pockets).		D		FILL/ REWORKED ESTUARINE No odour
				E		2.0							
						2.5							
				E		3.0							

Test pit CTP01 terminated at 3m

Sketch

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

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

consistency/density index

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

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Engineering Log - Excavation

Excavation No. ***CTP02***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***18.9.2012***

Principal: Date completed: ***18.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306524 m R.L. Surface:

excavation dimensions: 3m long 2m wide Northing: 6185782 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Sandy GRAVEL:** Fine to coarse grained, angular, black/dark grey with a trace of white, sand is fine to coarse grained.	D	VD		FILL (CEMENTED SLAG) Moderately cemented No odour
				E		1.0			**FILL; Sandy CLAY:** Medium to high plasticity, dark brown, sand is fine to coarse grained, with some fine to coarse grained, sub rounded to angular gravels, and some cobbles 60-200mm, angular gravel, trace of foreign materials (metal,plastic packaging).	>Wp M	S/MD D		FILL No odour
				E		1.5			**FILL; Cobbly Gravelly SAND:** Fine to coarse grained, dark brown, cobbles 60-200mm, angular (slag), gravel is fine to coarse grained, sub angular to angular, with some clay, high plasticity, dark brown/brown (in pockets). **FILL; SAND:** Fine to medium grained, pale yellow, with a trace of clay, high plasticity, dark brown (in pockets). ... Dark brown sand layer at 1.7m-1.8m				FILL/ REWORKED ESTUARINE No odour
				E		2.5			... Observed sea shells (white, coarse grained) and some orange and brown sands (mottled) at 2.9m-3.0m.				
				E		3.0			Test pit CTP02 terminated at 3m				

Sketch

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

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

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

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Engineering Log - Excavation

Excavation No. **CTP03**

Sheet 1 of 1

Office Job No.: **ENAUWOLL04107AA**

Client: **PORT KEMBLA PORT CORPORATION**

Date started: **17.9.2012**

Principal:

Date completed: **17.9.2012**

Project: **PRELIMINARY BASELINE CONTAMINATION ASSESSMENT**

Logged by: **AJW**

Test pit location: **INNER HARBOUR, PORT KEMBLA**

Checked by: **MF**

equipment type and model: 20T EXCAVATOR | Pit Orientation: | Easting: 306553 m | R.L. Surface:

excavation dimensions: 4m long 2m wide | Northing: 6185858 m | datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E					**FILL; Sandy GRAVEL:** Fine to coarse grained, sub rounded to angular, grey, sand is fine to coarse grained.	D	VD		FILL (CEMENT SLAG) Moderately cemented No odour
				E		0.5			**FILL; Clayey Gravelly SAND:** Fine to coarse grained, dark brown, gravel is fine to coarse grained, sub angular to angular, clay is medium to high plasticity, brown/orange mottled (in pockets).				FILL No odour
									FILL; COBBLES & BOULDERS: 60-300mm, sub angular, comprising slag.		L		FILL (SLAG) Distinct slag odour
				E		1.0			**FILL; Gravelly CLAY:** Low to medium plasticity, black (glossy), gravel is fine to coarse grained, angular, (coal and coalwash), with some organics (wood decomposed).				FILL (SOUTH WALL ONLY) No odour
				E						>Wp	S		FILL Distinct slag odour
				E					**FILL; CLAY:** Medium to high plasticity, dark grey/orange mottled.	>Wp/M	S/MD		FILL No odour
						1.5			**FILL; Clayey SAND/Sandy CLAY:** Sand is fine to medium grained, pale yellow, clay is medium to high plasticity, dark red/brown, sand is pale yellow/orange/grey mottled.				
				E		2.0			**FILL; SAND:** Fine to medium grained, pale yellow, with a trace of cobbles, rounded, dark red (metal slag). ... Becoming dark yellow at 2.2m ... Dark red stained sand at 2.4 -2.6m, observed some cobbles (slag) with dark red/orange stained sand surrounding cobbles.	M	D/VD		FILL/ REWORKED ESTUARINE No odour
				E		2.5			... Becoming pale red/yellow				
									... Observed pocket of dark red/brown gravelly sand at 2.8-3.0m. Gravel is sub rounded to sub angular, dark red, coarse grained, comprising metal slag.				
				E		3.0							... Additional sample colected from stained sand.
									Test pit CTP03 terminated at 3m				

Sketch

method

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

support

S shoring N nil

penetration

1 2 3 4 no resistance ranging to refusal

water

water level on date shown

water inflow

water outflow

notes, samples, tests

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

classification symbols and soil description

based on unified classification system

moisture

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

consistency/density index

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

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Engineering Log - Excavation

Excavation No. **CTP04**

Sheet 1 of 1

Office Job No.: **ENAUWOLL04107AA**

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***17.9.2012***

Principal: Date completed: ***17.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306527 m R.L. Surface:

excavation dimensions: m long m wide Northing: 6185941 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Sandy GRAVEL:** Fine to coarse grained, sub rounded to angular, dark grey, sand is fine to coarse grained.	D	VD		FILL (CEMENTED SLAG) Moderately cemented to 0.1m Weakly cemented No odour
				E					**FILL; Clayey SAND:** Black, fine to medium grained, clay is low to medium plasticity, with some gravel, medium to coarse grained, sub angular and some organics (wood, roots), with some foreign materials (concrete,brick,metal pipe,metal wire,metal sheet fragment).	M	D		FILL Distinct decaying odour ... Metal pipe observed to cross test pit in north-south orientation at 0.7m.
				E		1.0			**FILL; SAND:** Fine to medium grained, pale brown/orange, with a trace of clay, high plasticity, pale brown (in pockets).				FILL/ REWORKED ESTUARINE No odour
				E		1.5							
				E		2.0							
				E		2.5			**FILL; SAND:** Medium grained, pale yellow, with some sea shells, fine to coarse grained, white.				
						3.0			Test pit CTP04 terminated at 3m				

Sketch

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

support
- S shoring
- N nil

penetration
1 2 3 4 — no resistance ranging to refusal

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

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

classification symbols and soil description
based on unified classification system

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

consistency/density index

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

coffey environments

Engineering Log - Excavation

Excavation No. ***CTP05***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***17.9.2012***

Principal: Date completed: ***17.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306572 m R.L. Surface:

excavation dimensions: 4m long 2.5m wide Northing: 6185921 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.0			**FILL; Cobbly Gravelly SAND:** Fine to coarse grained, brown, gravel is fine to coarse grained, sub angular to angular, with cobbles, 60-100mm, sub angular to angular.	D	VD		FILL (CEMENTED SLAG) Moderately cemented No odour
									FILL; Sandy GRAVEL: Fine to coarse grained, black, angular, sand is fine to coarse grained, with some cobbles and boulders (slag).				
				E		0.5			**FILL; Clayey SAND:** Fine to medium grained, brown, clay is low plasticity.	M	D		FILL No odour
									FILL; SAND: Fine to medium grained, pale yellow.	D	VD/D		FILL/ REWORKED ESTUARINE No odour
				E		1.0							
						1.5							
				E		2.0							
						2.5			... Becoming pale yellow/orange/red mottled and clayey sand.				
				E		3.0							

Test pit CTP05 terminated at 3m

Sketch

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

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

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

coffey environments

Engineering Log - Excavation

Excavation No. ***CTP06***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***17.9.2012***

Principal: Date completed: ***17.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306577 m R.L. Surface:

excavation dimensions: 4m long 2m wide Northing: 6185967 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E					**FILL; Sandy GRAVEL:** Fine to coarse grained, sub rounded to angular, grey, sand is fine to coarse grained.	D	VD		FILL (CEMENTED SLAG) Moderately cemented No odour
				E		0.5			**FILL; Cobbly Clayey SAND:** Fine to medium grained, brown, cobbles 60-200mm (slag), angular, clay is medium to high plasticity, dark brown, (in pockets), with trace boulders (slag), with trace of foreign materials including (plastic,pvc pipe fragments). ... becoming pale brown at 1.0m	M	MD		FILL No odour ... metal bar/pipe protruding west side of test pit at 0.9m.
				E		1.0							
						1.5							
				E		2.0			**FILL; Sandy CLAY:** Medium to high plasticity, brown, with red and yellow mottles, sand is fine to medium grained.	S	>Wp		FILL/ REWORKED ESTUARINE No odour
				E		2.5			**FILL; Clayey SAND:** Fine to coarse grained, dark brown/orange mottled (with some black pockets), clay is medium to high plasticity. ... becoming pale yellow at 2.6m-2.7m ... change to black at 2.7m-3.0m	M	L/MD		
				E		3.0			Test pit CTP06 terminated at 3m				

Sketch

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

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

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

coffey environments

Engineering Log - Excavation

Excavation No. **CTP07**

Sheet 1 of 1

Office Job No.: **ENAUWOLL04107AA**

Client: **PORT KEMBLA PORT CORPORATION**

Date started: **19.9.2012**

Principal:

Date completed: **19.9.2012**

Project: **PRELIMINARY BASELINE CONTAMINATION ASSESSMENT**

Logged by: **AJW**

Test pit location: **INNER HARBOUR, PORT KEMBLA**

Checked by: **MF**

equipment type and model: 20T EXCAVATOR | Pit Orientation: | Easting: 306703 m | R.L. Surface:

excavation dimensions: 3m long 1.5m wide | Northing: 6185972 m | datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E					**FILL; Clayey GRAVEL:** Fine to medium grained, angular, grey/pale brown (white on surface), clay is low to medium plasticity with some fine grained sand.	D/M	D/VD		FILL (CEMENTED SLAG) Weakly cemented
				E									
				E		0.5			**FILL; Clayey Gravelly SAND:** Fine to coarse grained, dark brown, gravel is fine to coarse grained, rounded to angular, low to medium plasticity clay, with some cobbles 60-200mm, sub angular, with trace of high plasticity clay (in pockets), with trace foreign materials (plastic wrapping/packaging,timber fragments,concrete fragments (cobbles), hessian cloth, plastic pvc fragments (orange)), with trace organics (roots,rootlets), gravel and cobbles comprise slag.	M	MD/D		FILL (MIXED) Weak organic odour
						1.0							
				E		1.5							
				E		2.0			... with trace boulders (300-400mm) from 2.0m				
				E		2.5			... with some boulders (comprising blue,grey,red slag) at 2.5m				
						3.0			Test pit CTP07 terminated at 2.6m				Test pit terminated at 2.6m due to refusal on boulders.

Sketch

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

support
S shoring N nil

penetration
1 2 3 4
no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

consistency/density index

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

coffey environments

Engineering Log - Excavation

Excavation No. ***CTP08***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***19.9.2012***

Principal: Date completed: ***19.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306746 m R.L. Surface:

excavation dimensions: 3m long 1.5m wide Northing: 6186022 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Clayey GRAVEL:** Fine to medium grained, angular, grey/pale brown (white on surface), clay is low to medium plasticity, white, with some fine grained sand.	D M	VD D		FILL (CEMENTED SLAG) Moderately cemented No odour
				E		1.0			**FILL; Clayey Gravelly SAND:** Fine to coarse grained, black, clay is low plasticity, gravel is fine to coarse grained, sub angular to sub rounded, with some silt, with some cobbles 60-200mm, angular, (white/black/yellow).				FILL No odour
				E		1.5			... increased gravel, comprising mainly coal and coalwash. **FILL; Clayey GRAVEL:** Fine to coarse grained, black (shiny), angular, clay is low plasticity, with some fine to coarse grained sand.				FILL (COALWASH) No odour Weakly cemented
				E		2.0			**FILL; SAND:** Fine to medium grained, pale yellow, with some high plasticity clay, grey/brown (in pockets).				FILL/REWORKED ESTUARINE No odour Sampled clay layer
				E		2.5			... observed layer of clay, high plasticity, dark grey at 2.7m-2.75m.				
				E		3.0							
						3.5			Test pit CTP08 terminated at 3.2m				

Sketch

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

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

consistency/density index

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

coffey environments

Engineering Log - Excavation

Excavation No. **CTP09**

Sheet 1 of 1

Office Job No.: **ENAUWOLL04107AA**

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***19.9.2012***

Principal: Date completed: ***19.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306766 m R.L. Surface:

excavation dimensions: m long 1.5m wide Northing: 6185978 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Clayey GRAVEL:** Fine to medium grained, angular, grey/pale brown (white on surface), clay is low to medium plasticity, white, with some fine grained sand.	D M	VD/H D		FILL(CEMENTED SLAG) Moderately cemented No odour
									FILL; Clayey Gravelly SAND: Dark brown, fine to coarse grained, gravel is fine to coarse grained, sub angular, clay is low plasticity.				FILL No odour
				E		1.0			**FILL; Gravelly Sandy CLAY:** Low to medium plasticity, black, sand is fine to coarse grained, gravel is fine to coarse grained, sub angular, with some silt, with trace foreign materials (concrete,brick,metal wire,timber,metal brake pad,rubber fragment and white object.	>Wp M	F D		FILL Weak decaying odour Observed white object at 0.9m-1.0m (sampled)
				E		1.5							
				E		2.0							
				E		2.5			**FILL; SAND:** Fine to medium grained, pale yellow, with some high plasticity clay, grey/brown (in pockets).				FILL/REWORKED ESTUARINE
						3.0			Test pit CTP09 terminated at 3m				

Sketch

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

support
S shoring N nil

penetration
1 2 3 4
no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

consistency/density index

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

coffey environments

Engineering Log - Excavation

Excavation No. ***CTP10***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***21.9.2012***

Principal: Date completed: ***21.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306800 m R.L. Surface:

excavation dimensions: 3m long 1.5m wide Northing: 6185982 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Clayey GRAVEL:** Fine to medium grained, angular, dark grey/pale brown, clay is low to medium plasticity, white, with some fine to coarse grained sand.	D	VD		FILL (CEMENTED SLAG) No odour
										M	MD		Moderately cemented
									FILL; Cobbly Gravelly SAND: Fine to coarse grained, brown/dark brown, cobbles 60-200mm, sub angular to angular (white/black) comprising slag, gravel is fine to coarse grained, sub angular to angular, with some foreign materials (timber,concrete,metal).				FILL No odour
						1.0							Plastic PVC tube (orange,empty) observed at 0.7m on North East corner of test pit.
				E									Rubber cord at 1.1m
				E		1.5			**FILL; Gravelly CLAY:** Low plasticity, black, gravel is fine to coarse grained, angular, shiny black, with some fine grained sand, with some foreign materials (rubber, metal wire).	<Wp	Fb		FILL (COALWASH) No odour
									FILL; Sandy COBBLES: 60-200mm, angular, white and blue, sand is fine to coarse grained, brown, with some foreign materials (metal bar, metal wire, timber fragments, PVC plastic fragments).	M	L/MD		FILL(SLAG) Distinct slag odour
						2.0			**FILL; Cobbly Gravelly CLAY:** Low plasticity, black, gravel is fine to coarse grained, angular, black shiny (coalwash), cobbles are sub angular, comprising slag.				FILL No odour
									FILL; Sandy GRAVEL: Coarse grained, angular, dark grey comprising basalt, sand is fine to coarse grained, dark brown/pale brown.		MD		
				E		2.5							
						3.0			Test pit CTP10 terminated at 2.6m				Test pit terminated at 2.6m due to refusal on cemented slag (?).

Sketch

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

support
S shoring N nil

penetration
1 2 3 4
no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

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

coffey environments

Engineering Log - Excavation

Excavation No. **CTP11**

Sheet 1 of 1

Office Job No.: **ENAUWOLL04107AA**

Client: **PORT KEMBLA PORT CORPORATION**

Date started: **21.9.2012**

Principal:

Date completed: **21.9.2012**

Project: **PRELIMINARY BASELINE CONTAMINATION ASSESSMENT**

Logged by: **AJW**

Test pit location: **INNER HARBOUR, PORT KEMBLA**

Checked by: **MF**

equipment type and model: 20T EXCAVATOR | Pit Orientation: | Easting: 306843 m | R.L. Surface:

excavation dimensions: 3m long 1.5m wide | Northing: 6185965 m | datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Clayey GRAVEL:** Fine to medium grained, angular, dark grey/pale brown, clay is low to medium plasticity, white, with some fine to coarse grained sand.	D	VD		FILL (CEMENTED SLAG) Moderately cemented No odour
										<Wp	Fb		
									FILL; Gravelly Sandy CLAY: Low plasticity, black, gravel is fine to coarse grained, angular, black shiny (coalwash), sand is fine to medium grained.				FILL (COALWASH) No odour
				E					**FILL; Cobbly Gravelly SAND:** Fine to coarse grained, brown/dark brown, cobbles 60-200mm, sub angular to angular (white/black) comprising slag, gravel is fine to coarse grained, sub angular to angular, with some clay, low plasticity, with some foreign materials (metal sheet 200x400mm, plastic, concrete and red brick fragments and red cemented slag gravels).	M	MD		FILL No odour
						1.0					VD		FILL (CEMENTED SLAG) Moderately cemented No odour
											D		FILL (SLAG) No odour
						1.5			**FILL; Clayey GRAVEL:** Fine to medium grained, angular, dark grey/pale brown, clay is low to medium plasticity, white, with some fine to coarse grained sand. **FILL; Sandy COBBLES:** 60-200mm, angular, white/grey/blue, sand is fine to coarse grained, grey/brown. **FILL; SAND:** Fine to medium grained, pale yellow/pale red. ... mainly pale yellow from 1.6m.		L/MD		FILL/REWORKED ESTUARINE No odour
				E		2.0							
						2.5					VD		Walls of sand are stable from 2.4m
				E		3.0							

Test pit CTP11 terminated at 3m

Sketch

method

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

support

S shoring N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

water level on date shown

water inflow

water outflow

notes, samples, tests

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

classification symbols and soil description

based on unified classification system

moisture

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

consistency/density index

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

coffey environments

Engineering Log - Excavation

Excavation No. ***CTP12***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***21.9.2012***

Principal: Date completed: ***21.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306805 m R.L. Surface:

excavation dimensions: 3m long 1.5m wide Northing: 6186030 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E					**FILL; Clayey GRAVEL:** Fine to medium grained, angular, dark grey/pale brown, clay is low to medium plasticity, white, with some fine to coarse grained sand.	D	VD		FILL (CEMENTED SLAG) Moderately cemented No odour
										M	D		
				E		0.5			**FILL; Clayey SAND:** Fine to coarse grained, brown, clay is high plasticity, dark grey (in pockets), with some gravel and cobbles 20-200mm, sub rounded to sub angular (slag), with some foreign materials (metal wire, brick fragments).				FILL No odour
				E					**FILL; Gravelly CLAY:** Low plasticity, black, gravel is fine to coarse grained, angular, comprising coalwash, with some fine to medium grained sand.	<Wp	Fb		FILL (COALWASH) No odour
						1.0			**FILL; COBBLES & BOULDERS:** 60-400mm, angular, blue/white/grey, comprising slag, with some brown sand, fine to coarse grained, and some gravel fine to coarse grained, sub rounded to angular.	M	D		FILL (SLAG) Distinct slag odour Excavator difficulty on cemented slag, cobbles and boulders
						1.5							
				E									... Encountered metal pipe section (diameter 35mm) on North West corner of test pit at 1.8m.
						2.0					VD		
						2.5			Test pit CTP12 terminated at 2.3m				Test pit terminated at 2.3m due to refusal on cobbles and boulders (slag).
						3.0							

Sketch

method

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

support

S shoring N nil

penetration

1 2 3 4 — no resistance ranging to refusal

water

water level on date shown

water inflow

water outflow

notes, samples, tests

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

classification symbols and soil description

based on unified classification system

moisture

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

consistency/density index

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

coffey environments

Engineering Log - Excavation

Excavation No. ***CTP13***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***21.9.2012***

Principal: Date completed: ***21.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306808 m R.L. Surface:

excavation dimensions: 3m long 1.5m wide Northing: 6186053 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Clayey GRAVEL:** Fine to medium grained, angular, dark grey/pale brown, clay is low to medium plasticity, white, with some fine to coarse grained sand.	D <Wp	VD Fb		FILL (CEMENTED SLAG) Moderately cemented No odour
									FILL; Gravelly CLAY: Low plasticity, black, gravel is fine to coarse grained, angular, black shiny (coalwash).	M <Wp	VD Fb		FILL (COALWASH) No odour
						1.0			**FILL; Clayey GRAVEL:** Fine to medium grained, angular, dark grey/pale brown, clay is low to medium plasticity, white, with some fine to coarse grained sand.	M	D		FILL (CEMENTED SLAG) Moderately cemented No odour
				E					**FILL; Gravelly CLAY:** Low plasticity, black, gravel is fine to coarse grained, angular, black shiny (coalwash).				FILL No odour
						1.5			**FILL; COBBLES & BOULDERS:** 60-400mm, angular, blue/white/grey, with some brown sand, fine to coarse grained, and some gravel fine to coarse grained, sub rounded to angular.				FILL (SLAG) Distinct slag odour
				E					**FILL; SAND:** Fine to medium grained, pale yellow/brown, with some clay, high plasticity, dark brown, and some sea shells, coarse grained gravel size, white.				FILL/ REWORKED ESTUARINE No odour
						2.0							
				E		2.5							
						3.0							

Test pit CTP13 terminated at 3m

Sketch

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

support
S shoring N nil

penetration
1 2 3 4 no resistance ranging to refusal

water
water level on date shown
water inflow
water outflow

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

classification symbols and soil description
based on unified classification system

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

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

coffey environments

Engineering Log - Excavation

Excavation No. ***CTP14***

Sheet 1 of 1

Office Job No.: ***ENAUWOLL04107AA***

Client: ***PORT KEMBLA PORT CORPORATION*** Date started: ***18.9.2012***

Principal: Date completed: ***18.9.2012***

Project: ***PRELIMINARY BASELINE CONTAMINATION ASSESSMENT*** Logged by: ***AJW***

Test pit location: ***INNER HARBOUR, PORT KEMBLA*** Checked by: ***MF***

equipment type and model: 20T EXCAVATOR Pit Orientation: Easting: 306666 m R.L. Surface:

excavation dimensions: 3m long 2m wide Northing: 6186083 m datum:

excavation information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
E			NONE OBSERVED	E		0.5			**FILL; Clayey GRAVEL:** Fine to coarse grained, angular, dark grey/dark brown, with some fine grained sand, and some silt, clay is dark brown, low plasticity.	D	L		FILL No odour
				E		1.0			**FILL; Gravelly SAND/Gravelly CLAY:** Medium to high plasticity, dark brown (with some grey/red mottled) clay, sand is fine to coarse grained, gravel is fine to coarse grained, rounded to angular, with some foreign materials (metal, fabric, black plastic) and some silt, and some organics (roots,rootlets) from 1.0m.	>Wp	F		Moderately cemented pockets at 0.4m FILL (MIXED) No odour Clay observed in pockets
				E		1.5			**FILL; Cobbly Gravelly SAND:** Fine to coarse grained, dark brown/black, cobbles 60-200mm, angular, comprising slag and cemented gravels, gravel is fine to coarse grained, sub angular to angular, with some foreign materials (metal), and some silt. ... mainly black coloured soil from 1.8m.	M	MD		
				E		2.0							
				E		2.5							
				E		3.0							

Test pit CTP14 terminated at 3m

Sketch

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

support
- S shoring
- N nil

penetration
1 2 3 4 — no resistance ranging to refusal

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

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

classification symbols and soil description
based on unified classification system

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

consistency/density index

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

Appendix D
Headspace Screening Results

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla

Coffey Environments Pty Ltd
ACN 090 522 759 ABN 45 090 522 759

coffey environments
SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

job no.:
ENAUWOLL 04107AA

Photoionisation Detector Results

Client:	PORT KEMBLA PORT CORPORATION	**Office:**	WOLLONGONG
Principal:		**Date:**	17/9/12 - 21/9/12
Project:	PRELIMINARY BASELINE CONTAMINATION ASSESSMENT	**By:**	AJW
Location:	INNER HARBOUR PORT KEMBLA NSW	**Checked by:**	JB
PID Serial Number:	MINIRAE 2000 110-008460	**Lamp Voltage:**	10.6eV
Last checked/calibrated:	Calibrated daily from 17/9/12 to 21/9/12	**0ppm Calibration:**	0.0ppm
Calibration gas type/concentration:	Isobutylene/100ppm	**100ppm Calibration:**	100ppm

Location Number	Date	Test	Bore or sample probe depth (m)	Duration (mins)	Background Reading (ppm)	last reading (ppm)	Maximum Reading (ppm)	Notes
BLANK 1	18-Sep-12	HS	N/A	0.25	0.1	8.0	10.3	BLANK SAMPLE BAG
BLANK 2	19-Sep-12	HS	N/A	0.25	0.6	7.6	7.6	BLANK SAMPLE BAG
CTP01	18-Sep-12	HS	0.0 - 0.2	0.25	0.1	4.5	4.5	No odour
CTP01	18-Sep-12	HS	0.6 - 0.7	0.25	0.1	7.5	7.5	No odour
CTP01	18-Sep-12	HS	0.8 - 1.0	0.25	0.1	12.2	12.2	No odour
CTP01	18-Sep-12	HS	1.1 - 1.2	0.25	1.1	10.3	10.3	No odour
CTP01	18-Sep-12	HS	1.2 - 1.3	0.25	0.6	12.2	12.2	No odour
CTP01	18-Sep-12	HS	1.8 - 2.1	0.25	0.6	14.2	14.2	No odour
CTP01	18-Sep-12	HS	2.8 - 3.0	0.25	0.6	10.3	10.3	No odour
CTP02	18-Sep-12	HS	0.0 - 0.1	0.25	0.1	0.4	0.4	No odour
CTP02	18-Sep-12	HS	0.6 - 0.7	0.25	0.1	0.4	0.4	No odour
CTP02	18-Sep-12	HS	1.0 - 1.3	0.25	0.1	0.4	0.5	No odour
CTP02	18-Sep-12	HS	1.9 - 2.1	0.25	0.1	0.6	0.6	No odour
CTP02	18-Sep-12	HS	2.8 - 3.0	0.25	0.1	1.0	1.1	No odour
CTP03	17-Sep-12	HS	0.0 - 0.1	0.25	1.0	10.9	30.8	No odour, slow rise
CTP03	17-Sep-12	HS	0.4 - 0.6	0.25	0.0	154	156	No odour, slow rise
CTP03	17-Sep-12	HS	0.8 - 1.0	0.25	1.0	35.3	35.3	No odour, slow rise
CTP03	17-Sep-12	HS	1.0 - 1.2	0.25	5.8	187	208	No odour, slow rise
CTP03	17-Sep-12	HS	1.2 - 1.4	0.25	0.0	160	188	No odour, slow rise
CTP03	17-Sep-12	HS	2.0 - 2.2	0.25	2.8	66.0	67.0	No odour, slow rise
CTP03	17-Sep-12	HS	2.4 - 2.6	0.25	0.0	37.6	37.9	No odour, slow rise
CTP03	17-Sep-12	HS	2.4 - 2.6	0.25	0.0	42.9	42.9	No odour, slow rise
CTP03	17-Sep-12	HS	2.8 - 3.0	0.25	0.0	98.4	102	No odour, slow rise
CTP04	17-Sep-12	HS	0.0 - 0.1	0.25	0.1	1.3	1.3	No odour, slow rise
CTP04	17-Sep-12	HS	0.5 - 0.6	0.25	0.4	6.8	6.8	Distinct decaying odour, slow rise

*Fill in the test type as follows:-
BH ( ) = soil gas probe sample
HS ( ) = headspace sample

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job no.:
ENAUWOLL 04107AA

Photoionisation Detector Results

Client:	PORT KEMBLA PORT CORPORATION	**Office:**	WOLLONGONG
Principal:		**Date:**	17/9/12 - 21/9/12
Project:	PRELIMINARY BASELINE CONTAMINATION ASSESSMENT	**By:**	AJW
Location:	INNER HARBOUR PORT KEMBLA NSW	**Checked by:**	JB
PID Serial Number:	MINIRAE 2000 110-008460	**Lamp Voltage:**	10.6eV
Last checked/calibrated:	Calibrated daily from 17/9/12 to 21/9/12	**0ppm Calibration:**	0.0ppm
Calibration gas type/concentration:	Isobutylene/100ppm	**100ppm Calibration:**	100ppm

Location Number	Date	Test	Bore or sample probe depth (m)	Duration (mins)	Background Reading (ppm)	last reading (ppm)	Maximum Reading (ppm)	Notes
CTP04	17-Sep-12	HS	0.6 - 0.8	0.25	0.3	2.6	2.8	Distinct decaying odour, slow rise
CTP04	17-Sep-12	HS	1.3 - 1.5	0.25	0.4	2.2	2.6	Distinct decaying odour, slow rise
CTP04	17-Sep-12	HS	1.8 - 2.1	0.25	0.4	2.6	4.1	Distinct decaying odour, slow rise
CTP04	17-Sep-12	HS	2.7 - 2.9	0.25	0.3	3.0	3.1	Distinct decaying odour, slow rise
CTP05	17-Sep-12	HS	0.0 - 0.2	0.25	0.1	7.5	7.5	No odour, slow rise
CTP05	17-Sep-12	HS	0.4 - 0.6	0.25	0.1	6.0	6.0	No odour, slow rise
CTP05	17-Sep-12	HS	0.7 - 0.8	0.25	0.1	0.6	0.6	No odour, slow rise
CTP05	17-Sep-12	HS	1.4 - 1.6	0.25	0.1	0.9	0.9	No odour, slow rise
CTP05	17-Sep-12	HS	1.8 - 2.1	0.25	0.1	1.1	1.1	No odour, slow rise
CTP05	17-Sep-12	HS	2.8 - 3.0	0.25	0.1	1.1	1.1	No odour, slow rise
CTP06	17-Sep-12	HS	0.0 - 0.2	0.25	0.1	17.3	17.3	No odour, slow rise
CTP06	17-Sep-12	HS	0.5 - 0.7	0.25	0.1	25.8	30.4	No odour, slow rise
CTP06	17-Sep-12	HS	1.3 - 1.5	0.25	0.5	2.9	3.0	No odour, slow rise
CTP06	17-Sep-12	HS	2.0 - 2.3	0.25	2.0	1.9	1.9	No odour, slow rise
CTP06	17-Sep-12	HS	2.4 - 2.7	0.25	0.3	28.0	29.0	No odour, slow rise
CTP06	17-Sep-12	HS	2.8 - 3.0	0.25	0.1	24.5	24.5	No odour, slow rise
CTP07	19-Sep-12	HS	0.1 - 0.2	0.25	0.1	6.8	6.8	No odour, slow rise
CTP07	19-Sep-12	HS	0.0 - 0.05	0.25	0.1	5.3	5.9	No odour, slow rise
CTP07	19-Sep-12	HS	0.5 - 0.6	0.25	0.1	3.2	3.3	Weak organic odour, slow rise
CTP07	19-Sep-12	HS	1.1 - 1.3	0.25	0.1	3.8	3.8	Weak organic odour, slow rise
CTP07	19-Sep-12	HS	1.8 - 2.0	0.25	0.1	5.0	5.1	Weak organic odour, slow rise
CTP07	19-Sep-12	HS	2.4 - 2.5	0.25	0.1	4.3	4.3	Weak organic odour, slow rise
CTP08	19-Sep-12	HS	0.0 - 0.1	0.25	0.6	11.9	12.0	No odour, slow rise
CTP08	19-Sep-12	HS	0.6 - 0.7	0.25	0.6	1.7	1.7	No odour, slow rise

*Fill in the test type as follows:-
BH ( ) = soil gas probe sample
HS ( ) = headspace sample

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job no.:
ENAUWOLL 04107AA

Photoionisation Detector Results

Client:	PORT KEMBLA PORT CORPORATION	**Office:**	WOLLONGONG
Principal:		**Date:**	17/9/12 - 21/9/12
Project:	PRELIMINARY BASELINE CONTAMINATION ASSESSMENT	**By:**	AJW
Location:	INNER HARBOUR PORT KEMBLA NSW	**Checked by:**	JB
PID Serial Number:	MINIRAE 2000 110-008460	**Lamp Voltage:**	10.6eV
Last checked/calibrated:	Calibrated daily from 17/9/12 to 21/9/12	**0ppm Calibration:**	0.0ppm
Calibration gas type/concentration:	Isobutylene/100ppm	**100ppm Calibration:**	100ppm

Location Number	Date	Test	Bore or sample probe depth (m)	Duration (mins)	Background Reading (ppm)	last reading (ppm)	Maximum Reading (ppm)	Notes
CTP08	19-Sep-12	HS	1.0 - 1.2	0.25	0.6	10.1	10.1	No odour, slow rise
CTP08	19-Sep-12	HS	1.5 - 1.7	0.25	0.6	9.1	9.1	No odour, slow rise
CTP08	19-Sep-12	HS	2.1 - 2.3	0.25	0.2	8.2	8.2	No odour, slow rise
CTP08	19-Sep-12	HS	2.7 - 2.75	0.25	0.2	6.3	6.3	No odour, slow rise
CTP09	19-Sep-12	HS	0.0 - 0.1	0.25	0.1	8.0	8.0	No odour, slow rise
CTP09	19-Sep-12	HS	0.6 - 0.7	0.25	0.1	8.4	8.4	Weak decaying odour, slow rise
CTP09	19-Sep-12	HS	0.9 - 1.0	0.25	0.1	7.6	9.0	Weak decaying odour, slow rise
CTP09	19-Sep-12	HS	1.3 -1.5	0.25	0.7	11.0	11.0	Weak decaying odour, slow rise
CTP09	19-Sep-12	HS	2.0 - 2.2	0.25	0.7	11.4	11.4	No odour, slow rise
CTP09	19-Sep-12	HS	2.7 - 2.9	0.25	0.7	10.1	10.1	No odour, slow rise
CTP10	21-Sep-12	HS	0.0 - 0.15	0.25	0.0	0.0	0.0	No Odour
CTP10	21-Sep-12	HS	1.0 - 1.2	0.25	0.0	0.1	0.1	No Odour
CTP10	21-Sep-12	HS	1.2 - 1.4	0.25	0.0	0.1	0.1	No Odour
CTP10	21-Sep-12	HS	2.2 - 2.4	0.25	0.0	0.1	0.1	No Odour
CTP11	21-Sep-12	HS	0.0 - 0.1	0.25	0.0	0.1	0.1	No Odour
CTP11	21-Sep-12	HS	0.6 - 0.8	0.25	0.0	0.1	0.1	No Odour
CTP11	21-Sep-12	HS	1.7 - 2.0	0.25	0.0	0.1	0.1	No Odour
CTP11	21-Sep-12	HS	2.8 - 3.0	0.25	0.0	0.1	0.1	No Odour
CTP12	21-Sep-12	HS	0.0 - 0.1	0.25	0.0	0.2	0.2	No Odour
CTP12	21-Sep-12	HS	0.3 - 0.5	0.25	0.0	0.2	0.2	No Odour
CTP12	21-Sep-12	HS	0.5 - 0.6	0.25	0.0	0.3	0.3	No Odour
CTP12	21-Sep-12	HS	0.6 - 0.7	0.25	0.0	0.1	0.1	No Odour
CTP12	21-Sep-12	HS	1.7 - 2.0	0.25	0.0	0.2	0.3	Distinct slag odour
CTP13	21-Sep-12	HS	0.0 - 0.1	0.25	0.0	0.2	0.2	No Odour
CTP13	21-Sep-12	HS	1.0 - 1.3	0.25	0.0	0.3	0.3	Distinct slag odour
CTP13	21-Sep-12	HS	1.4 - 1.6	0.25	0.0	0.3	0.3	No Odour

*Fill in the test type as follows:-
BH ( ) = soil gas probe sample
HS ( ) = headspace sample

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job no.:
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Photoionisation Detector Results

Client:	PORT KEMBLA PORT CORPORATION	**Office:**	WOLLONGONG
Principal:		**Date:**	17/9/12 - 21/9/12
Project:	PRELIMINARY BASELINE CONTAMINATION ASSESSMENT	**By:**	AJW
Location:	INNER HARBOUR PORT KEMBLA NSW	**Checked by:**	JB
PID Serial Number:	MINIRAE 2000 110-008460	**Lamp Voltage:**	10.6eV
Last checked/calibrated:	Calibrated daily from 17/9/12 to 21/9/12	**0ppm Calibration:**	0.0ppm
Calibration gas type/concentration:	Isobutylene/100ppm	**100ppm Calibration:**	100ppm

Location Number	Date	Test	Bore or sample probe depth (m)	Duration (mins)	Background Reading (ppm)	last reading (ppm)	Maximum Reading (ppm)	Notes
CTP13	21-Sep-12	HS	2.4 - 2.6	0.25	0.0	0.3	0.3	No Odour
CTP14	18-Sep-12	HS	0.0 - 0.05	0.25	0.5	10.4	10.4	No odour, slow rise
CTP14	18-Sep-12	HS	0.7 - 0.9	0.25	0.5	11.9	11.9	No odour, slow rise
CTP14	18-Sep-12	HS	1.4 - 1.6	0.25	0.5	14.4	14.4	No odour, slow rise
CTP14	18-Sep-12	HS	2.1 - 2.4	0.25	0.9	6.3	6.4	No odour, slow rise
CTP14	18-Sep-12	HS	2.8 - 3.0	0.25	0.9	6.4	6.4	No odour, slow rise

*Fill in the test type as follows:-
BH ( ) = soil gas probe sample
HS ( ) = headspace sample

Appendix E
Laboratory Reports

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla

mgt LabMark ENVIRONMENTAL LABORATORIES

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.

NATA WORLD RECOGNISED ACCREDITATION

Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500

Attention:James Boyle

Report	**352720-S**
Client Reference	ENAUWOLL04107AA
Received Date	Sep 20, 2012

Client Sample ID			**CTP06/0.0-0.2**	**QC1**	**CTP05/0.0-0.2**	**CTP04/0.0-0.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se16852**	**S12-Se16858**	**S12-Se16859**	**S12-Se16866**
Date Sampled			**Sep 17, 2012**	**Sep 17, 2012**	**Sep 17, 2012**	**Sep 17, 2012**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	< 10	< 10
TRH C10-C14	50	mg/kg	64	< 50	< 50	< 50
TRH C15-C28	100	mg/kg	< 100	< 100	< 100	< 100
TRH C29-C36	100	mg/kg	< 100	< 100	< 100	< 100
TRH C10-36 (Total)	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total m+p-Xylenes	1	mg/kg	< 1	< 1	< 1	< 1
o-Xylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Total BTEX	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
4-Bromofluorobenzene (surr.)	1	%	95	102	93	94
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	110	< 100
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	< 1	< 1	< 1
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			CTP06/0.0-0.2	QC1	CTP05/0.0-0.2	CTP04/0.0-0.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se16852**	**S12-Se16858**	**S12-Se16859**	**S12-Se16866**
Date Sampled			**Sep 17, 2012**	**Sep 17, 2012**	**Sep 17, 2012**	**Sep 17, 2012**
Test/Reference	LOR	Unit				
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH	1	mg/kg	< 1	< 1	< 1	< 1
2-Fluorobiphenyl (surr.)	1	%	89	96	93	94
p-Terphenyl-d14 (surr.)	1	%	87	104	92	91
Heavy Metals						
Arsenic	1	mg/kg	4.8	3.1	8.4	3.4
Cadmium	0.1	mg/kg	0.3	0.4	0.4	0.3
Chromium	2	mg/kg	580	440	87	430
Copper	2	mg/kg	3.4	5.5	58	6.3
Lead	2	mg/kg	5.0	8.7	71	6.3
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	1	mg/kg	14	20	8.3	14
Zinc	5	mg/kg	52	64	480	60
% Moisture	0.1	%	3.7	4.5	7.4	4.5

Client Sample ID			CTP04/0.6-0.8	CTP03/0.0-0.1	CTP03/0.4-0.6	CTP03/1.0-1.2
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16868	S12-Se16873	S12-Se16874	S12-Se16876
Date Sampled			Sep 17, 2012	Sep 17, 2012	Sep 17, 2012	Sep 17, 2012
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	-	< 10
TRH C10-C14	50	mg/kg	< 50	110	-	< 50
TRH C15-C28	100	mg/kg	< 100	< 100	-	< 100
TRH C29-C36	100	mg/kg	< 100	< 100	-	< 100
TRH C10-36 (Total)	100	mg/kg	< 100	110	-	< 100
Acrylates						
Methyl acrylate	20	mg/kg	-	-	< 20	< 20
Alcohols						
Ethanol	10	mg/kg	-	-	< 10	< 10
Isobutanol	10	mg/kg	-	-	< 10	< 10
Isopropanol	10	mg/kg	-	-	< 10	< 10
Methanol	10	mg/kg	-	-	< 10	< 10
n-Butanol*	10	mg/kg	-	-	< 10	< 10
n-Propanol	10	mg/kg	-	-	< 10	< 10
BTEX						
Benzene	0.5	mg/kg	< 0.5	< 0.5	-	-
Toluene	0.5	mg/kg	< 0.5	< 0.5	-	-
Ethylbenzene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total m+p-Xylenes	1	mg/kg	< 1	< 1	-	-
o-Xylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	< 1.5	-	-
Total BTEX	1.5	mg/kg	< 1.5	< 1.5	-	-
4-Bromofluorobenzene (surr.)	1	%	95	94	-	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	< 20
TRH >C10-C16	50	mg/kg	< 50	64	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	62	-	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	-	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	-	< 100
Volatile Organic Compounds (VOC)						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2-Dibromo-3-chloropropane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	< 0.5

Client Sample ID			CTP04/0.6-0.8	CTP03/0.0-0.1	CTP03/0.4-0.6	CTP03/1.0-1.2
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16868	S12-Se16873	S12-Se16874	S12-Se16876
Date Sampled			Sep 17, 2012	Sep 17, 2012	Sep 17, 2012	Sep 17, 2012
Test/Reference	LOR	Unit				
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Butanone (MEK)	5	mg/kg	-	-	< 5	< 5
2-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Hexanone (MBK)	5	mg/kg	-	-	< 5	< 5
2-Pentanone	5	mg/kg	-	-	< 5	< 5
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	< 0.5
4-Methyl-2-pentanone (MIBK)	5	mg/kg	-	-	< 5	< 5
Benzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Bromobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	< 0.5
Bromoform	0.5	mg/kg	-	-	< 0.5	< 0.5
Bromomethane	5	mg/kg	-	-	< 5	< 5
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	< 0.5
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	< 0.5
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chloroethane	5	mg/kg	-	-	< 5	< 5
Chloroform	0.5	mg/kg	-	-	< 0.5	< 0.5
Chloromethane	5	mg/kg	-	-	< 5	< 5
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	< 0.5
Dichlorodifluoromethane	5	mg/kg	-	-	< 5	< 5
Ethylbenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	< 0.5
Methylene Chloride	5	mg/kg	-	-	< 5	< 5
n-Butylbenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
n-Propylbenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
o-Xylene	0.5	mg/kg	-	-	< 0.5	< 0.5
p-Isopropyltoluene	0.5	mg/kg	-	-	< 0.5	< 0.5
sec-Butylbenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Styrene	0.5	mg/kg	-	-	< 0.5	< 0.5
tert-Butylbenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	< 0.5
Toluene	0.5	mg/kg	-	-	< 0.5	< 0.5
Total m+p-Xylenes	1	mg/kg	-	-	< 1	< 1
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	< 0.5
Trichloroethene	0.5	mg/kg	-	-	< 0.5	< 0.5
Trichlorofluoromethane	5	mg/kg	-	-	< 5	< 5
Vinyl acetate	5	mg/kg	-	-	< 5	< 5
Vinyl chloride	2	mg/kg	-	-	< 2	< 2
Toluene-d8 (surr.)	1	%	-	-	99	95
4-Bromofluorobenzene (surr.)	1	%	-	-	108	91
1.2-Dichloroethane-d4 (surr.)	1	%	-	-	103	108
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	< 0.5

Client Sample ID			CTP04/0.6-0.8	CTP03/0.0-0.1	CTP03/0.4-0.6	CTP03/1.0-1.2
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16868	S12-Se16873	S12-Se16874	S12-Se16876
Date Sampled			Sep 17, 2012	Sep 17, 2012	Sep 17, 2012	Sep 17, 2012
Test/Reference	LOR	Unit				
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PCB	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	71	70
Polyaromatic Hydrocarbons (PAH)						
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)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	< 1	-	-
Benzo(g.h.i)perylene	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	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH	1	mg/kg	< 1	< 1	-	-
2-Fluorobiphenyl (surr.)	1	%	93	96	-	-
p-Terphenyl-d14 (surr.)	1	%	92	92	-	-
Semivolatile Organic Compounds (SVOC)						
2-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Methylnaphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Methylphenol (o-Cresol)	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Naphthylamine	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Nitroaniline	1	mg/kg	-	-	< 1	< 1
2-Nitrophenol	0.5	mg/kg	-	-	< 0.5	< 0.5
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	-	-	< 1	< 1
3-Methylcholanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
4-Aminobiphenyl	0.5	mg/kg	-	-	< 0.5	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	< 0.5
4-Chloro-3-methylphenol	0.5	mg/kg	-	-	< 0.5	< 0.5
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	< 0.5
4.4'-DDD	0.5	mg/kg	-	-	< 0.5	< 0.5
4.4'-DDE	0.5	mg/kg	-	-	< 0.5	< 0.5
4.4'-DDT	1	mg/kg	-	-	< 1	< 1
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acetophenone	0.5	mg/kg	-	-	< 0.5	< 0.5
Aldrin	0.5	mg/kg	-	-	< 0.5	< 0.5
Aniline	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(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5

Client Sample ID			CTP04/0.6-0.8	CTP03/0.0-0.1	CTP03/0.4-0.6	CTP03/1.0-1.2
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16868	S12-Se16873	S12-Se16874	S12-Se16876
Date Sampled			Sep 17, 2012	Sep 17, 2012	Sep 17, 2012	Sep 17, 2012
Test/Reference	LOR	Unit				
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	-	< 0.5	< 0.5
Bis(2-ethylhexyl)phthalate	5	mg/kg	-	-	< 5	< 5
Butyl benzyl phthalate	0.5	mg/kg	-	-	< 0.5	< 0.5
Chlorpyrifos	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	< 0.5
Coumaphos	0.5	mg/kg	-	-	< 0.5	< 0.5
d-BHC	0.5	mg/kg	-	-	< 0.5	< 0.5
Demeton-O	0.5	mg/kg	-	-	< 0.5	< 0.5
Demeton-S	0.5	mg/kg	-	-	< 0.5	< 0.5
Di-n-butyl phthalate	0.5	mg/kg	-	-	< 0.5	< 0.5
Di-n-octyl phthalate	0.5	mg/kg	-	-	< 0.5	< 0.5
Diazinon	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenzofuran	0.5	mg/kg	-	-	< 0.5	< 0.5
Dichlorvos	0.5	mg/kg	-	-	< 0.5	< 0.5
Dieldrin	0.5	mg/kg	-	-	< 0.5	< 0.5
Diethyl phthalate	0.5	mg/kg	-	-	< 0.5	< 0.5
Dimethoate	0.5	mg/kg	-	-	< 0.5	< 0.5
Dimethyl phthalate	0.5	mg/kg	-	-	< 0.5	< 0.5
Diphenylamine	0.5	mg/kg	-	-	< 0.5	< 0.5
Disulfoton	0.5	mg/kg	-	-	< 0.5	< 0.5
Endosulfan sulphate	0.5	mg/kg	-	-	< 0.5	< 0.5
Endrin	0.5	mg/kg	-	-	< 0.5	< 0.5
Endrin aldehyde	0.5	mg/kg	-	-	< 0.5	< 0.5
Endrin ketone	0.5	mg/kg	-	-	< 0.5	< 0.5
Ethoprop	0.5	mg/kg	-	-	< 0.5	< 0.5
Fenitrothion	0.5	mg/kg	-	-	< 0.5	< 0.5
Fensulfothion	0.5	mg/kg	-	-	< 0.5	< 0.5
Fenthion	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	0.7	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
g-BHC (Lindane)	0.5	mg/kg	-	-	< 0.5	< 0.5
Heptachlor	0.5	mg/kg	-	-	< 0.5	< 0.5
Heptachlor epoxide	0.5	mg/kg	-	-	< 0.5	< 0.5
Hexachlorobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	< 0.5
Hexachlorocyclopentadiene	2	mg/kg	-	-	< 2	< 2
Hexachloroethane	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Malathion	0.5	mg/kg	-	-	< 0.5	< 0.5
Methoxychlor	0.5	mg/kg	-	-	< 0.5	< 0.5
Methyl azinphos	0.5	mg/kg	-	-	< 0.5	< 0.5
Methyl parathion	0.5	mg/kg	-	-	< 0.5	< 0.5
Mevinphos	0.5	mg/kg	-	-	< 0.5	< 0.5
Monocrotophos	10	mg/kg	-	-	< 10	< 10
N-Nitrosodibutylamine	0.5	mg/kg	-	-	< 0.5	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	-	-	< 1	< 1
N-Nitrosopiperidine	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Nitrobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5

Client Sample ID			CTP04/0.6-0.8	CTP03/0.0-0.1	CTP03/0.4-0.6	CTP03/1.0-1.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se16868**	**S12-Se16873**	**S12-Se16874**	**S12-Se16876**
Date Sampled			**Sep 17, 2012**	**Sep 17, 2012**	**Sep 17, 2012**	**Sep 17, 2012**
Test/Reference	LOR	Unit				
Parathion	0.5	mg/kg	-	-	< 0.5	< 0.5
Pentachlorobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pentachlorophenol	1	mg/kg	-	-	< 1	< 1
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenol	0.5	mg/kg	-	-	< 0.5	< 0.5
Phorate	0.5	mg/kg	-	-	< 0.5	< 0.5
Profenofos	0.5	mg/kg	-	-	< 0.5	< 0.5
Prothiofos	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	0.6	< 0.5
Ronnel	0.5	mg/kg	-	-	< 0.5	< 0.5
Stirophos	0.5	mg/kg	-	-	< 0.5	< 0.5
Trichloronate	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	-	-	82	81
Nitrobenzene-d5 (surr.)	1	%	-	-	80	76
p-Terphenyl-d14 (surr.)	1	%	-	-	81	88
2-Fluorobiphenyl (surr.)	1	%	-	-	80	87
Heavy Metals						
Arsenic	1	mg/kg	14	11	-	2.3
Cadmium	0.1	mg/kg	0.2	0.5	-	< 0.1
Chromium	2	mg/kg	12	570	-	5.3
Copper	2	mg/kg	15	3.6	-	20
Lead	2	mg/kg	26	5.3	-	27
Mercury	0.05	mg/kg	< 0.05	< 0.05	-	0.06
Nickel	1	mg/kg	5.7	12	-	5.9
Zinc	5	mg/kg	94	48	-	36
% Moisture	0.1	%	16	3.9	11	25
Asbestos			ASET Report	-	-	ASET Report

Client Sample ID			QC1
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**S12-Se16883**
Date Sampled			**Sep 17, 2012**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	10	mg/kg	< 10
TRH C10-C14	50	mg/kg	85
TRH C15-C28	100	mg/kg	< 100
TRH C29-C36	100	mg/kg	< 100
TRH C10-36 (Total)	100	mg/kg	< 100
BTEX			
Benzene	0.5	mg/kg	< 0.5
Toluene	0.5	mg/kg	< 0.5
Ethylbenzene	0.5	mg/kg	< 0.5
Total m+p-Xylenes	1	mg/kg	< 1
o-Xylene	0.5	mg/kg	< 0.5
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5
Total BTEX	1.5	mg/kg	< 1.5
4-Bromofluorobenzene (surr.)	1	%	93
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polyaromatic Hydrocarbons (PAH)			
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH	1	mg/kg	< 1
2-Fluorobiphenyl (surr.)	1	%	95
p-Terphenyl-d14 (surr.)	1	%	88
Heavy Metals			
Arsenic	1	mg/kg	6.4
Cadmium	0.1	mg/kg	0.4
Chromium	2	mg/kg	750
Copper	2	mg/kg	2.3
Lead	2	mg/kg	5.8
Mercury	0.05	mg/kg	< 0.05

Client Sample ID			**QC1**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**S12-Se16883**
Date Sampled			**Sep 17, 2012**
Test/Reference	LOR	Unit	
Nickel	1	mg/kg	14
Zinc	5	mg/kg	62
% Moisture	0.1	%	4.5

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: E004 Petroleum Hydrocarbons (TPH)	Sydney	Sep 24, 2012	14 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Sydney	Sep 24, 2012	14 Day
Acrylates - Method: GC-FID MGT METHOD 470A & US EPA SW846 METHOD 8000	Melbourne	Sep 25, 2012	5 Day
Alcohols - Method: USEPA 8000 Alcohols	Melbourne	Sep 25, 2012	14 Day
BTEX - Method: E029/E016 BTEX	Sydney	Sep 24, 2012	14 Day
Volatile Organic Compounds (VOC) - Method: E016 Volatile Organic Compounds (VOC)	Sydney	Sep 22, 2012	14 Day
Polychlorinated Biphenyls (PCB) - Method: E013 Polychlorinated Biphenyls (PCB)	Sydney	Sep 22, 2012	14 Day
Polyaromatic Hydrocarbons (PAH) - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Sep 24, 2012	14 Day
Semivolatile Organic Compounds (SVOC) - Method: E017 Semivolatile Organic Compounds (SVOC)	Sydney	Sep 24, 2012	14 Day
Metals M8 - Method: E022 Acid Extractable metals in Soils & E026 Mercury	Sydney	Sep 24, 2012	28 Day
% Moisture - Method: E005 Moisture Content	Sydney	Sep 24, 2012	28 Day
Asbestos	Sydney	Sep 22, 2012	

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

e.mail : enviro@mgtlabmark.com.au
web : www.mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**	
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:**	352720
		Phone:	02 4201 1400
		Fax:	02 4201 1401
Client Job No.:	ENAUWOLL04107AA		

Received:	Sep 20, 2012 5:30 PM
Due:	Sep 28, 2012
Priority:	5 Day
Contact Name:	James Boyle

mgt-LabMark Client Manager: Jean Heng

Sample Detail	% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted												
Melbourne Laboratory - NATA Site # 1254 & 14271				X	X							
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**												
TP06/0.0-0.2 / Sep 17, 2012 / / Soil / S12-Se16852	X					X	X		X	X		
TP06/0.5-0.7 / Sep 17, 2012 / / Soil / S12-Se16853			X									
TP06/1.3-1.5 / Sep 17, 2012 / / Soil / S12-Se16854			X									
TP06/2.0-2.3 / Sep 17, 2012 / / Soil / S12-Se16855			X									
TP06/2.4-2.7 / Sep 17, 2012 / / Soil / S12-Se16856			X									
TP06/2.8-3.0 / Sep 17, 2012 / / Soil / S12-Se16857			X									
C1 / Sep 17, 2012 / / Soil / S12-Se16858	X					X	X		X	X		
TP05/0.0-0.2 / Sep 17, 2012 / / Soil / S12-Se16859	X					X	X		X	X		
TP05/0.4-0.6 / Sep 17, 2012 / / Soil / S12-Se16860			X									

First Reported:Sep 28, 2012
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ENVIRONMENTAL LABORATORIES

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Address:	118 Auburn Street	**Report #:**	352720	**Due:**	Sep 28, 2012
	Wollongong	**Phone:**	02 4201 1400	**Priority:**	5 Day
	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP05/0.7-0.8	Sep 17, 2012		Soil	S12-Se16861			X									
TP05/1.4-1.6	Sep 17, 2012		Soil	S12-Se16862			X									
TP05/1.8-2.1	Sep 17, 2012		Soil	S12-Se16863			X									
TP05/2.8-3.0	Sep 17, 2012		Soil	S12-Se16864			X									
C2	Sep 17, 2012		Soil	S12-Se16865			X									
TP04/0.0-0.1	Sep 17, 2012		Soil	S12-Se16866	X					X	X		X	X		
TP04/0.5-0.6	Sep 17, 2012		Soil	S12-Se16867			X									
TP04/0.6-0.8	Sep 17, 2012		Soil	S12-Se16868	X	X				X	X		X	X		
TP04/1.3-1.5	Sep 17, 2012		Soil	S12-Se16869			X									
TP04/1.8-2.0	Sep 17, 2012		Soil	S12-Se16870			X									
TP04/2.7-2.9	Sep 17, 2012		Soil	S12-Se16871			X									

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Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352720 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Sep 28, 2012 5 Day James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
C3		Sep 17, 2012		Soil	S12-Se16872			X								
TP08/0.0-0.1		Sep 17, 2012		Soil	S12-Se16873	X					X	X		X	X	
TP08/0.4-0.6		Sep 17, 2012		Soil	S12-Se16874	X			X	X			X			X	X
TP08/0.8-1.0		Sep 17, 2012		Soil	S12-Se16875			X								
TP08/1.0-1.2		Sep 17, 2012		Soil	S12-Se16876	X	X		X	X	X		X		X	X	X
TP08/1.2-1.4		Sep 17, 2012		Soil	S12-Se16877			X								
TP08/2.0-2.2		Sep 17, 2012		Soil	S12-Se16878			X								
TP08/2.4-2.6		Sep 17, 2012		Soil	S12-Se16879			X								
TP08/2.8-3.0		Sep 17, 2012		Soil	S12-Se16880			X								
TP08/2.8-0A		Sep 17, 2012		Soil	S12-Se16881			X								

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	Wollongong	**Phone:**	02 4201 1400	**Priority:**	5 Day
	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail						% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X							
Sydney Laboratory - NATA Site # 18217						X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory							X										
BC4		Sep 17, 2012		Soil	S12-Se16882			X									
BC1		Sep 17, 2012		Soil	S12-Se16883	X					X	X		X	X		

First Reported:Sep 28, 2012
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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 an RPD

UNITS

mg/kg:milligrams per Kilogram
mg/L:milligrams per litre
µg/L:micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%:Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 milliltres

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 client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
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 was performed on samples not pertaining to this report, however 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 below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

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	< 10			10	Pass	
TRH C10-C14	mg/kg	< 50			50	Pass	
TRH C15-C28	mg/kg	< 100			100	Pass	
TRH C29-C36	mg/kg	< 100			100	Pass	
Method Blank							
Acrylates GC-FID MGT METHOD 470A & US EPA SW846 METHOD 8000							
Methyl acrylate	mg/kg	< 20			20	Pass	
Method Blank							
Alcohols USEPA 8000 Alcohols							
Ethanol	mg/kg	< 10			10	Pass	
Isobutanol	mg/kg	< 10			10	Pass	
Isopropanol	mg/kg	< 10			10	Pass	
Methanol	mg/kg	< 10			10	Pass	
n-Butanol*	mg/kg	< 10			10	Pass	
n-Propanol	mg/kg	< 10			10	Pass	
Method Blank							
BTEX E029/E016 BTEX							
Benzene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.5			0.5	Pass	
Total m+p-Xylenes	mg/kg	< 1			1	Pass	
o-Xylene	mg/kg	< 0.5			0.5	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 1.5			1.5	Pass	
Total BTEX	mg/kg	< 1.5			1.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - Draft 2010 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							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromo-3-chloropropane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 5			5	Pass	
2-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
2-Hexanone (MBK)	mg/kg	< 5			5	Pass	
2-Pentanone	mg/kg	< 5			5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 5			5	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 5			5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 5			5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 5			5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 5			5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
Methylene Chloride	mg/kg	< 5			5	Pass	
n-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
n-Propylbenzene	mg/kg	< 0.5			0.5	Pass	
p-Isopropyltoluene	mg/kg	< 0.5			0.5	Pass	
sec-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
tert-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 5			5	Pass	
Vinyl acetate	mg/kg	< 5			5	Pass	
Vinyl chloride	mg/kg	< 2			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							
Polyaromatic Hydrocarbons (PAH) 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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	mg/kg	< 1			1	Pass	
Benzo(g.h.i)perylene	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							
Semivolatile Organic Compounds (SVOC) E017 Semivolatile Organic Compounds (SVOC)							
2-Chloronaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2-Methylnaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.5			0.5	Pass	
2-Naphthylamine	mg/kg	< 0.5			0.5	Pass	
2-Nitroaniline	mg/kg	< 1			1	Pass	
2-Nitrophenol	mg/kg	< 0.5			0.5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 1			1	Pass	
3-Methylcholanthrene	mg/kg	< 0.5			0.5	Pass	
4-Aminobiphenyl	mg/kg	< 0.5			0.5	Pass	
4-Bromophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 0.5			0.5	Pass	
4-Chlorophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4.4'-DDD	mg/kg	< 0.5			0.5	Pass	
4.4'-DDE	mg/kg	< 0.5			0.5	Pass	
4.4'-DDT	mg/kg	< 1			1	Pass	
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Acetophenone	mg/kg	< 0.5			0.5	Pass	
Aldrin	mg/kg	< 0.5			0.5	Pass	
Aniline	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(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Bis(2-chloroethoxy)methane	mg/kg	< 0.5			0.5	Pass	
Bis(2-ethylhexyl)phthalate	mg/kg	< 5			5	Pass	
Butyl benzyl phthalate	mg/kg	< 0.5			0.5	Pass	
Chlorpyrifos	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Coumaphos	mg/kg	< 0.5			0.5	Pass	
d-BHC	mg/kg	< 0.5			0.5	Pass	
Demeton-O	mg/kg	< 0.5			0.5	Pass	
Demeton-S	mg/kg	< 0.5			0.5	Pass	
Di-n-butyl phthalate	mg/kg	< 0.5			0.5	Pass	
Di-n-octyl phthalate	mg/kg	< 0.5			0.5	Pass	
Diazinon	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Dibenzofuran	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dichlorvos	mg/kg	< 0.5			0.5	Pass	
Dieldrin	mg/kg	< 0.5			0.5	Pass	
Diethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethoate	mg/kg	< 0.5			0.5	Pass	
Dimethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Diphenylamine	mg/kg	< 0.5			0.5	Pass	
Disulfoton	mg/kg	< 0.5			0.5	Pass	
Endosulfan sulphate	mg/kg	< 0.5			0.5	Pass	
Endrin	mg/kg	< 0.5			0.5	Pass	
Endrin aldehyde	mg/kg	< 0.5			0.5	Pass	
Endrin ketone	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	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
g-BHC (Lindane)	mg/kg	< 0.5			0.5	Pass	
Heptachlor	mg/kg	< 0.5			0.5	Pass	
Heptachlor epoxide	mg/kg	< 0.5			0.5	Pass	
Hexachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Hexachlorocyclopentadiene	mg/kg	< 2			2	Pass	
Hexachloroethane	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Malathion	mg/kg	< 0.5			0.5	Pass	
Methoxychlor	mg/kg	< 0.5			0.5	Pass	
Methyl azinphos	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	
N-Nitrosodibutylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosodipropylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosopiperidine	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Nitrobenzene	mg/kg	< 0.5			0.5	Pass	
Parathion	mg/kg	< 0.5			0.5	Pass	
Pentachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachloronitrobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Phenol	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	
Pyrene	mg/kg	< 0.5			0.5	Pass	
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							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
Arsenic	mg/kg	< 1			1	Pass	
Cadmium	mg/kg	< 0.1			0.1	Pass	
Chromium	mg/kg	< 2			2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	mg/kg	< 2			2	Pass	
Lead	mg/kg	< 2			2	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 1			1	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
TRH C6-C9	%	103			70-130	Pass	
TRH C10-C14	%	82			70-130	Pass	
LCS - % Recovery							
BTEX E029/E016 BTEX							
Benzene	%	105			70-130	Pass	
Toluene	%	100			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	
Total m+p-Xylenes	%	97			70-130	Pass	
o-Xylene	%	99			70-130	Pass	
Xylenes(ortho.meta and para)	%	98			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
Naphthalene	%	115			70-130	Pass	
TRH C6-C10	%	101			70-130	Pass	
TRH >C10-C16	%	76			70-130	Pass	
LCS - % Recovery							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
1.1-Dichloroethane	%	105			75-125	Pass	
1.1-Dichloroethene	%	112			70-130	Pass	
1.1.1-Trichloroethane	%	106			70-130	Pass	
1.1.1.2-Tetrachloroethane	%	100			70-130	Pass	
1.1.2-Trichloroethane	%	108			70-130	Pass	
1.2-Dibromo-3-chloropropane	%	97			70-130	Pass	
1.2-Dibromoethane	%	101			70-130	Pass	
1.2-Dichlorobenzene	%	100			70-130	Pass	
1.2-Dichloroethane	%	96			70-130	Pass	
1.2-Dichloropropane	%	100			70-130	Pass	
1.2.3-Trichloropropane	%	97			70-130	Pass	
1.2.4-Trichlorobenzene	%	109			70-130	Pass	
1.2.4-Trimethylbenzene	%	104			70-130	Pass	
1.3-Dichlorobenzene	%	102			70-130	Pass	
1.3-Dichloropropane	%	100			70-130	Pass	
1.3.5-Trimethylbenzene	%	103			70-130	Pass	
1.4-Dichlorobenzene	%	102			70-130	Pass	
2-Butanone (MEK)	%	108			70-130	Pass	
2-Chlorotoluene	%	101			70-130	Pass	
2-Hexanone (MBK)	%	102			70-130	Pass	
2-Pentanone	%	99			70-130	Pass	
4-Chlorotoluene	%	103			70-130	Pass	
4-Methyl-2-pentanone (MIBK)	%	101			70-130	Pass	
Bromobenzene	%	99			70-130	Pass	
Bromodichloromethane	%	101			70-130	Pass	
Bromoform	%	100			70-130	Pass	
Bromomethane	%	107			70-130	Pass	
Carbon disulfide	%	110			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Carbon Tetrachloride	%	107			70-130	Pass	
Chlorobenzene	%	99			70-130	Pass	
Chloroethane	%	109			70-130	Pass	
Chloroform	%	99			70-130	Pass	
Chloromethane	%	110			70-130	Pass	
cis-1.2-Dichloroethene	%	102			70-130	Pass	
cis-1.3-Dichloropropene	%	112			70-130	Pass	
Dibromochloromethane	%	107			70-130	Pass	
Dichlorodifluoromethane	%	99			70-130	Pass	
Hexachlorobutadiene	%	108			70-130	Pass	
Isopropyl benzene (Cumene)	%	118			70-130	Pass	
Methylene Chloride	%	109			70-130	Pass	
n-Butylbenzene	%	114			70-130	Pass	
n-Propylbenzene	%	105			70-130	Pass	
p-Isopropyltoluene	%	106			70-130	Pass	
sec-Butylbenzene	%	103			70-130	Pass	
Styrene	%	104			70-130	Pass	
tert-Butylbenzene	%	101			70-130	Pass	
Tetrachloroethene	%	115			70-130	Pass	
trans-1.2-Dichloroethene	%	102			70-130	Pass	
trans-1.3-Dichloropropene	%	112			70-130	Pass	
Trichloroethene	%	102			70-130	Pass	
Trichlorofluoromethane	%	101			70-130	Pass	
Vinyl acetate	%	111			70-130	Pass	
Vinyl chloride	%	112			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls (PCB) E013 Polychlorinated Biphenyls (PCB)							
Aroclor-1260	%	87			70-130	Pass	
LCS - % Recovery							
Polyaromatic Hydrocarbons (PAH) E007 Polyaromatic Hydrocarbons (PAH)							
Acenaphthene	%	97			70-130	Pass	
Acenaphthylene	%	89			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	85			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	%	89			70-130	Pass	
Benzo(g.h.i)perylene	%	85			70-130	Pass	
Chrysene	%	98			70-130	Pass	
Dibenz(a.h)anthracene	%	82			70-130	Pass	
Fluoranthene	%	92			70-130	Pass	
Fluorene	%	94			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	83			70-130	Pass	
Naphthalene	%	95			70-130	Pass	
Phenanthrene	%	94			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Semivolatile Organic Compounds (SVOC) E017 Semivolatile Organic Compounds (SVOC)							
2-Chlorophenol	%	105			70-130	Pass	
4-Chloro-3-methylphenol	%	77			70-130	Pass	
Acenaphthene	%	91			70-130	Pass	
Chlorpyrifos	%	108			70-130	Pass	
Coumaphos	%	119			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Demeton-O	%	115			70-130	Pass	
Demeton-S	%	111			70-130	Pass	
Diazinon	%	111			70-130	Pass	
Dichlorvos	%	109			70-130	Pass	
Dimethoate	%	114			70-130	Pass	
Disulfoton	%	110			70-130	Pass	
Ethoprop	%	113			70-130	Pass	
Fenitrothion	%	112			70-130	Pass	
Fensulfothion	%	114			70-130	Pass	
Fenthion	%	110			70-130	Pass	
Malathion	%	115			70-130	Pass	
Methyl azinphos	%	103			70-130	Pass	
Methyl parathion	%	118			70-130	Pass	
Mevinphos	%	109			70-130	Pass	
Monocrotophos	%	104			70-130	Pass	
Parathion	%	107			70-130	Pass	
Pentachlorophenol	%	77			70-130	Pass	
Phenol	%	98			70-130	Pass	
Phorate	%	112			70-130	Pass	
Profenofos	%	110			70-130	Pass	
Prothiofos	%	108			70-130	Pass	
Pyrene	%	89			70-130	Pass	
Ronnel	%	110			70-130	Pass	
Stirophos	%	103			70-130	Pass	
Trichloronate	%	110			70-130	Pass	
LCS - % Recovery							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
Arsenic	%	85			70-130	Pass	
Cadmium	%	80			70-130	Pass	
Chromium	%	74			70-130	Pass	
Copper	%	74			70-130	Pass	
Lead	%	72			70-130	Pass	
Mercury	%	99			70-130	Pass	
Nickel	%	78			70-130	Pass	
Zinc	%	82			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	S12-Se16852	CP	%	100			70-130	Pass	
TRH C10-C14	S12-Se15013	NCP	%	119			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S12-Se16852	CP	%	102			70-130	Pass	
Toluene	S12-Se16852	CP	%	98			70-130	Pass	
Ethylbenzene	S12-Se16852	CP	%	97			70-130	Pass	
Total m+p-Xylenes	S12-Se16852	CP	%	97			70-130	Pass	
o-Xylene	S12-Se16852	CP	%	98			70-130	Pass	
Xylenes(ortho.meta and para)	S12-Se16852	CP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1					
Naphthalene	S12-Se16852	CP	%	115			70-130	Pass	
TRH C6-C10	S12-Se16852	CP	%	99			70-130	Pass	
TRH >C10-C16	S12-Se15013	NCP	%	114			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polyaromatic Hydrocarbons (PAH)				Result 1					
Acenaphthene	S12-Se16852	CP	%	105			70-130	Pass	
Acenaphthylene	S12-Se16852	CP	%	101			70-130	Pass	
Anthracene	S12-Se16852	CP	%	101			70-130	Pass	
Benz(a)anthracene	S12-Se16852	CP	%	92			70-130	Pass	
Benzo(a)pyrene	S12-Se16852	CP	%	85			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se16852	CP	%	89			70-130	Pass	
Benzo(g.h.i)perylene	S12-Se16852	CP	%	71			70-130	Pass	
Chrysene	S12-Se16852	CP	%	98			70-130	Pass	
Dibenz(a.h)anthracene	S12-Se16852	CP	%	79			70-130	Pass	
Fluoranthene	S12-Se16852	CP	%	102			70-130	Pass	
Fluorene	S12-Se16852	CP	%	106			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S12-Se16852	CP	%	73			70-130	Pass	
Naphthalene	S12-Se16852	CP	%	101			70-130	Pass	
Phenanthrene	S12-Se16852	CP	%	102			70-130	Pass	
Pyrene	S12-Se16852	CP	%	101			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Zinc	S12-Se16642	NCP	%	104			70-130	Pass	
Spike - % Recovery									
Semivolatile Organic Compounds (SVOC)				Result 1					
Chlorpyrifos	S12-Se15663	NCP	%	105			70-130	Pass	
Coumaphos	S12-Se15663	NCP	%	124			70-130	Pass	
Demeton-O	S12-Se15663	NCP	%	91			70-130	Pass	
Demeton-S	S12-Se15663	NCP	%	86			70-130	Pass	
Diazinon	S12-Se15663	NCP	%	104			70-130	Pass	
Dichlorvos	S12-Se15663	NCP	%	99			70-130	Pass	
Dimethoate	S12-Se15663	NCP	%	108			70-130	Pass	
Disulfoton	S12-Se15663	NCP	%	89			70-130	Pass	
Ethoprop	S12-Se15663	NCP	%	108			70-130	Pass	
Fenitrothion	S12-Se15663	NCP	%	111			70-130	Pass	
Fensulfothion	S12-Se15663	NCP	%	127			70-130	Pass	
Fenthion	S12-Se15663	NCP	%	106			70-130	Pass	
Malathion	S12-Se15663	NCP	%	113			70-130	Pass	
Methyl azinphos	S12-Se15663	NCP	%	111			70-130	Pass	
Methyl parathion	S12-Se15663	NCP	%	119			70-130	Pass	
Mevinphos	S12-Se15663	NCP	%	105			70-130	Pass	
Monocrotophos	S12-Se15663	NCP	%	94			70-130	Pass	
Parathion	S12-Se15663	NCP	%	104			70-130	Pass	
Phorate	S12-Se15663	NCP	%	101			70-130	Pass	
Profenofos	S12-Se15663	NCP	%	116			70-130	Pass	
Prothiofos	S12-Se15663	NCP	%	109			70-130	Pass	
Ronnel	S12-Se15663	NCP	%	104			70-130	Pass	
Stirophos	S12-Se15663	NCP	%	106			70-130	Pass	
Trichloronate	S12-Se15663	NCP	%	106			70-130	Pass	
Spike - % Recovery									
Volatile Organic Compounds (VOC)				Result 1					
1.1-Dichloroethane	S12-Se18196	NCP	%	96			75-125	Pass	
1.1-Dichloroethene	S12-Se18196	NCP	%	107			70-130	Pass	
1.1.1-Trichloroethane	S12-Se18196	NCP	%	105			70-130	Pass	
1.1.1.2-Tetrachloroethane	S12-Se18196	NCP	%	103			70-130	Pass	
1.1.2-Trichloroethane	S12-Se18196	NCP	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.2-Dibromo-3-chloropropane	S12-Se18196	NCP	%	100			70-130	Pass	
1.2-Dibromoethane	S12-Se18196	NCP	%	96			70-130	Pass	
1.2-Dichlorobenzene	S12-Se18196	NCP	%	105			70-130	Pass	
1.2-Dichloroethane	S12-Se18196	NCP	%	103			70-130	Pass	
1.2-Dichloropropane	S12-Se18196	NCP	%	104			70-130	Pass	
1.2.3-Trichloropropane	S12-Se18196	NCP	%	103			70-130	Pass	
1.2.4-Trichlorobenzene	S12-Se18196	NCP	%	103			70-130	Pass	
1.2.4-Trimethylbenzene	S12-Se18196	NCP	%	102			70-130	Pass	
1.3-Dichlorobenzene	S12-Se18196	NCP	%	102			70-130	Pass	
1.3-Dichloropropane	S12-Se18196	NCP	%	95			70-130	Pass	
1.3.5-Trimethylbenzene	S12-Se18196	NCP	%	102			70-130	Pass	
1.4-Dichlorobenzene	S12-Se18196	NCP	%	103			70-130	Pass	
2-Butanone (MEK)	S12-Se18196	NCP	%	96			70-130	Pass	
2-Chlorotoluene	S12-Se18196	NCP	%	102			70-130	Pass	
2-Hexanone (MBK)	S12-Se18196	NCP	%	97			70-130	Pass	
2-Pentanone	S12-Se18196	NCP	%	104			70-130	Pass	
4-Chlorotoluene	S12-Se18196	NCP	%	102			70-130	Pass	
4-Methyl-2-pentanone (MIBK)	S12-Se18196	NCP	%	98			70-130	Pass	
Bromobenzene	S12-Se18196	NCP	%	104			70-130	Pass	
Bromodichloromethane	S12-Se18196	NCP	%	111			70-130	Pass	
Bromoform	S12-Se18196	NCP	%	111			70-130	Pass	
Bromomethane	S12-Se18196	NCP	%	105			70-130	Pass	
Carbon disulfide	S12-Se18196	NCP	%	101			70-130	Pass	
Carbon Tetrachloride	S12-Se18196	NCP	%	123			70-130	Pass	
Chlorobenzene	S12-Se18196	NCP	%	97			70-130	Pass	
Chloroethane	S12-Se18196	NCP	%	107			70-130	Pass	
Chloroform	S12-Se18196	NCP	%	100			70-130	Pass	
Chloromethane	S12-Se18196	NCP	%	101			70-130	Pass	
cis-1.2-Dichloroethene	S12-Se18196	NCP	%	96			70-130	Pass	
cis-1.3-Dichloropropene	S12-Se18196	NCP	%	101			70-130	Pass	
Dibromochloromethane	S12-Se18196	NCP	%	95			70-130	Pass	
Dichlorodifluoromethane	S12-Se18196	NCP	%	101			70-130	Pass	
Hexachlorobutadiene	S12-Se18196	NCP	%	101			70-130	Pass	
Isopropyl benzene (Cumene)	S12-Se18196	NCP	%	103			70-130	Pass	
Methylene Chloride	S12-Se18196	NCP	%	108			70-130	Pass	
n-Butylbenzene	S12-Se18196	NCP	%	101			70-130	Pass	
n-Propylbenzene	S12-Se18196	NCP	%	102			70-130	Pass	
p-Isopropyltoluene	S12-Se18196	NCP	%	104			70-130	Pass	
sec-Butylbenzene	S12-Se18196	NCP	%	102			70-130	Pass	
Styrene	S12-Se18196	NCP	%	102			70-130	Pass	
tert-Butylbenzene	S12-Se18196	NCP	%	104			70-130	Pass	
Tetrachloroethene	S12-Se18196	NCP	%	97			70-130	Pass	
trans-1.2-Dichloroethene	S12-Se18196	NCP	%	100			70-130	Pass	
trans-1.3-Dichloropropene	S12-Se18196	NCP	%	101			70-130	Pass	
Trichloroethene	S12-Se18196	NCP	%	103			70-130	Pass	
Trichlorofluoromethane	S12-Se18196	NCP	%	99			70-130	Pass	
Vinyl acetate	S12-Se18196	NCP	%	92			70-130	Pass	
Vinyl chloride	S12-Se18196	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S12-Se16876	CP	%	93			70-130	Pass	
Cadmium	S12-Se16876	CP	%	83			70-130	Pass	
Chromium	S12-Se16876	CP	%	78			70-130	Pass	
Copper	S12-Se16876	CP	%	70			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead	S12-Se16876	CP	%	77			70-130	Pass	
Mercury	S12-Se16876	CP	%	98			70-130	Pass	
Nickel	S12-Se16876	CP	%	75			70-130	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S12-Se16852	CP	mg/kg	< 10	< 10	<1	30%	Pass	
TRH C10-C14	S12-Se15013	NCP	mg/kg	110	110	6.0	30%	Pass	
TRH C15-C28	S12-Se15013	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH C29-C36	S12-Se15013	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Toluene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total m+p-Xylenes	S12-Se16852	CP	mg/kg	< 1	< 1	<1	30%	Pass	
o-Xylene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Xylenes(ortho.meta and para)	S12-Se16852	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Total BTEX	S12-Se16852	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
Naphthalene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S12-Se16852	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S12-Se16852	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S12-Se15013	NCP	mg/kg	74	61	18	30%	Pass	
TRH >C16-C34	S12-Se15013	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S12-Se15013	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Acenaphthene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se16852	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Benzo(g.h.i)perylene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S12-Se16852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	S12-Se16873	CP	mg/kg	11	6.7	47	30%	Fail	Q15
Cadmium	S12-Se16873	CP	mg/kg	0.5	0.5	7.0	30%	Pass	
Chromium	S12-Se16873	CP	mg/kg	570	630	10	30%	Pass	
Copper	S12-Se16873	CP	mg/kg	3.6	2.4	41	30%	Fail	Q15
Lead	S12-Se16873	CP	mg/kg	5.3	6.5	20	30%	Pass	
Mercury	S12-Se16873	CP	mg/kg	< 0.05	< 0.05	12	30%	Pass	
Nickel	S12-Se16873	CP	mg/kg	12	12	2.0	30%	Pass	
Zinc	S12-Se16873	CP	mg/kg	48	60	23	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Acrylates				Result 1	Result 2	RPD			
Methyl acrylate	S12-Se16874	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Alcohols				Result 1	Result 2	RPD			
Ethanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Isobutanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Isopropanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Methanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Butanol*	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Propanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
2-Chloronaphthalene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Chlorophenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylnaphthalene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Naphthylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Nitroaniline	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2-Nitrophenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
3-Methylcholanthrene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Aminobiphenyl	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Bromophenyl phenyl ether	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorophenyl phenyl ether	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDD	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDE	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDT	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Acetophenone	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aldrin	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aniline	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-chloroethoxy)methane	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-ethylhexyl)phthalate	S12-Se15013	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Butyl benzyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorpyrifos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Coumaphos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
d-BHC	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-O	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-S	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-butyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-octyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diazinon	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenzofuran	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorvos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dieldrin	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diethyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethoate	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diphenylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Disulfoton	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endosulfan sulphate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin aldehyde	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
Endrin ketone	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethoprop	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenitrothion	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fensulfothion	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenthion	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
g-BHC (Lindane)	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Heptachlor	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Heptachlor epoxide	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorocyclopentadiene	S12-Se15013	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Hexachloroethane	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Malathion	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methoxychlor	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl azinphos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl parathion	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Mevinphos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Monocrotophos	S12-Se15663	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
N-Nitrosodibutylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
N-Nitrosodipropylamine	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
N-Nitrosopiperidine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Nitrobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Parathion	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachloronitrobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Phenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	9.0	30%	Pass	
Phorate	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Profenofos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Prothiofos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ronnel	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Stirophos	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloronate	S12-Se15663	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
1.1-Dichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromo-3-chloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
2-Butanone (MEK)	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Chlorotoluene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Hexanone (MBK)	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Pentanone	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
4-Chlorotoluene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Bromobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Carbon disulfide	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Chloroform	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
cis-1.2-Dichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Hexachlorobutadiene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
n-Butylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
n-Propylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
p-Isopropyltoluene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
sec-Butylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
tert-Butylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Vinyl acetate	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Vinyl chloride	S12-Se18196	NCP	mg/kg	< 2	< 2	<1	30%	Pass	

Comments

Please note: Asbestos analysed by ASET (Job : ASET31045/34225/1-2) NATA Accreditation : 14484

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.
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Jean Heng	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
James Norford	Senior Analyst-Metal (NSW)
Laura Schofield	Senior Analyst-Volatile (NSW)
Ryan Hamilton	Senior Analyst-Organic (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

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET31045/ 34225 / 1 - 2
Your ref: 352720
NATA Accreditation No: 14484

25 September 2012

MGT- Labmark Environmental Pty Ltd
Unit F3, Building F, 16 Mars Road
Lane Cove NSW 2066

Attn: Ms Leanne Knowles

Dear Leanne,

Asbestos Identification
This report presents the results of two samples, forwarded by MGT- Labmark Environmental Pty Ltd on 21 September 2012, for analysis for asbestos.

1.Introduction: Two samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Safer Environment Method 1.)**

3. Results :

Sample No. 1. ASET31045 / 34225 / 1. CTP04 - 0.0-0.1 - Se16868
Approx dimensions 6.0 cm x 6.0 cm x 4.0 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of plaster and glass.
No asbestos detected.

Sample No. 2. ASET31045 / 34225 / 2. CTP03 - 1.0-1.2 - Se16876
Approx dimensions 6.0 cm x 6.0 cm x 3.5 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of plaster and cement.
No asbestos detected.

Analysed and reported by,

Nisansala Maddage. BSc(Hons)
Environmental Scientist/Approved Identifier

Mahen De Silva . BSc. MSc. Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Signatory

NATA
WORLD RECOGNISED ACCREDITATION

This document is issued in accordance with NATA's Accreditation requirements. Accredited for compliance with ISO/IEC 17025.

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: aset@bigpond.net.au WEBSITE: www.Ausset.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

e.mail : enviro@mgtlabmark.com.au
web : www.mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street	**Report #:**	352720	**Due:**	Sep 28, 2012
	Wollongong	**Phone:**	02 4201 1400	**Priority:**	5 Day
	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail	% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted												
Melbourne Laboratory - NATA Site # 1254 & 14271				X	X							
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**												
TP06/0.0-0.2 / Sep 17, 2012 / / Soil / S12-Se16852	X					X	X		X	X		
TP06/0.5-0.7 / Sep 17, 2012 / / Soil / S12-Se16853			X									
TP06/1.3-1.5 / Sep 17, 2012 / / Soil / S12-Se16854			X									
TP06/2.0-2.3 / Sep 17, 2012 / / Soil / S12-Se16855			X									
TP06/2.4-2.7 / Sep 17, 2012 / / Soil / S12-Se16856			X									
TP06/2.8-3.0 / Sep 17, 2012 / / Soil / S12-Se16857			X									
C1 / Sep 17, 2012 / / Soil / S12-Se16858	X					X	X		X	X		
TP05/0.0-0.2 / Sep 17, 2012 / / Soil / S12-Se16859	X					X	X		X	X		
TP05/0.4-0.6 / Sep 17, 2012 / / Soil / S12-Se16860			X									

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
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ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352720 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Sep 28, 2012 5 Day James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP05/0.7-0.8	Sep 17, 2012		Soil	S12-Se16861			X									
TP05/1.4-1.6	Sep 17, 2012		Soil	S12-Se16862			X									
TP05/1.8-2.1	Sep 17, 2012		Soil	S12-Se16863			X									
TP05/2.8-3.0	Sep 17, 2012		Soil	S12-Se16864			X									
C2	Sep 17, 2012		Soil	S12-Se16865			X									
TP04/0.0-0.1	Sep 17, 2012		Soil	S12-Se16866	X					X	X		X	X		
TP04/0.5-0.6	Sep 17, 2012		Soil	S12-Se16867			X									
TP04/0.6-0.8	Sep 17, 2012		Soil	S12-Se16868	X	X				X	X		X	X		
TP04/1.3-1.5	Sep 17, 2012		Soil	S12-Se16869			X									
TP04/1.8-2.0	Sep 17, 2012		Soil	S12-Se16870			X									
TP04/2.7-2.9	Sep 17, 2012		Soil	S12-Se16871			X									

Melbourne
3-5 Kingston Town Close
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ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
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	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
BC3		Sep 17, 2012		Soil	S12-Se16872			X								
TP08/0.0-0.1		Sep 17, 2012		Soil	S12-Se16873	X					X	X		X	X	
TP08/0.4-0.6		Sep 17, 2012		Soil	S12-Se16874	X			X	X			X			X	X
TP08/0.8-1.0		Sep 17, 2012		Soil	S12-Se16875			X								
TP08/1.0-1.2		Sep 17, 2012		Soil	S12-Se16876	X	X		X	X	X		X		X	X	X
TP08/1.2-1.4		Sep 17, 2012		Soil	S12-Se16877			X									
TP08/2.0-2.2		Sep 17, 2012		Soil	S12-Se16878			X									
TP08/2.4-2.6		Sep 17, 2012		Soil	S12-Se16879			X									
TP08/2.8-3.0		Sep 17, 2012		Soil	S12-Se16880			X									
TP08/2.8-0A		Sep 17, 2012		Soil	S12-Se16881			X									

Melbourne
3-5 Kingston Town Close
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ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352720 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Sep 28, 2012 5 Day James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail						% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X							
Sydney Laboratory - NATA Site # 18217						X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory							X										
C4		Sep 17, 2012		Soil	S12-Se16882			X									
C1		Sep 17, 2012		Soil	S12-Se16883	X					X	X		X	X		

mgt LabMark ENVIRONMENTAL LABORATORIES

ABN – 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

Sydney
Unit F6, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 8215 6222
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd Wollongong**

Contact name: James Boyle
Client job number: ENAUWOLL04107AA
COC number: 9609-10
Turn around time: 5 Day
Date/Time received: Sep 20, 2012 5:30 PM
mgt-LabMark reference: **352720**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by mgt-LabMark Sample Receipt : 11.5 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

SRA reissued - Analysis added to Se16858 | Alcohols & Methyl Acrylate performed by mgt-Labmark Melbourne | Asbestos conducted by ASET | SRA reissued removal of PAH/Phenols/OCP/OPP upon samples requiring SVOC analysis | Analysis added to CTP03/0.4-0.6 (Se16874) as requested
Samples received by the laboratory after 4pm are deemed to have been received the following working day.

Contact notes

If you have any questions with respect to these samples please contact:

Jean Heng on Phone : (+61) (2) 9900 8400 or by e.mail: jean.heng@mgtlabmark.com.au

Results will be delivered electronically via e.mail to James Boyle - james_boyle@coffey.com.

coffey

Chain of Custody

No: 9609

Laboratory Quotation / Order No:

Job No: ENAUWOLLO4107AA Sheet 1 of 2

Dispatch to: (Address & Phone No.) MGT Laboratory, Unit F3, 16 Mars Road, WEST LANE COVE NSW 2066	Sampled by: Alexander Williams	Consigning Officer: A. Williams Date Dispatched: 18/9/12
Attention: Sample Receipt	Project Manager: (report results to) James Boyle	Courier Service: MEB Courier Consignment Note No: # 352720

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Williams	18/9/12	08:00	Ellen WG mgt Lab mark	20/9/12	11:30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: *	SVOCs	VOCs	PCBs	phenols	asbestos	Alcohol **	Esters	Sample Condition on Receipt
SE168852	SOIL	ICE; 250mL jar ziplock bag*	CTP06/0.0-0.2	17/9/12	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	
53			/0.5-0.7													
54			/1.3-1.5													
55			/2.0-2.3													
56			/2.4-2.7													
57			/2.8-3.0													
58			QC1													
59			CTP05/0.0-0.2		✓	✓	✓	✓								
60			/0.4-0.6													
61			/0.7-0.8													Sample affected by water
62			/1.4-1.6													
63			/1.8-2.1													
64		Jar only	/2.8-3.0													Sample affected by water
65			QC2													Sample affected by water
66			CTR04/0.0-0.1		✓	✓	✓	✓								
67			/0.5-0.6													
68			/0.6-0.8	↓	✓	✓	✓	✓					✓			

Special Laboratory Instructions:

* Hg, Cr, Cd, Cu, Ni, Pb, Zn, As

** incl. methanol

Detection Limits:

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

64220/9-06

coffey

Chain of Custody

No: 9610

Laboratory Quotation / Order No:

Job No: ENAUWOLL04107AA Sheet 2 of 2

Dispatch to: (Address & Phone No.)	MGT Laboratory " "	Sampled by:	A-Williams	Consigning Officer:	A-Williams
				Date Dispatched:	18/9/12
Attention:	" "	Project Manager: (report results to)	J. Boyle	Courier Service:	"
				Consignment Note No:	" #352720

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
"	"	"	[signature]	20.09.12	17:30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	~~MAHs~~ = BTEX	Metals: *	SVOC	VOC	PCBs	phenols	Asbestos	esters	Alcohols **					Sample Condition on Receipt
SE116869	"	"	CTP04/1.3-1.5	17/9/12																
70			/1.8-2.1	↓																
71			↓ /2.7-2.9																	
72			QC3																	
73			CTP03/0.0-0.1		/	/	/	/												
74			/0.4-0.6																	
75			/0.8-1.0																	
76			/1.0-1.2			/		/	/	/	/	/	/	/	/					
77			/1.2-1.4																	
78			/2.0-2.2																	
79			/2.4-2.6																	
80			/2.8-3.0																	
81			↓ /2.8-3.0A																	
82			QC4	↓																
83.			QC1		/	/	/	/												

Special Laboratory Instructions: ** incl. methanol + ethanol * As, Cd, Cu, Cr, Pb, Ni, Hg, Zn

Detection Limits: Turnaround Required: " "

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

64220/9-06

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

#352482 #352721 #352720.

Enquiries Syd

From: Tammy Lakeland
Sent: Friday, 21 September 2012 2:38 PM
To: James Boyle
Cc: Jean Heng; Enquiries Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

Thanks for your phone call. As discussed, I have searched the NATA website but have not found a suitable option for accredited testing of glycerol. Thus, as per your instructions, I have cancelled the request for this compound.

We will now continue the contract review process for these relevant reports.

Regards,

Tammy

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 2:12 PM
To: Tammy Lakeland
Subject: RE: ENAUWOLL04107AA- change to CoC

If you can, please find an accredited lab that will analyse for glycerol.

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: Tammy Lakeland [mailto:Tammy.Lakeland@mgtlabmark.com.au]
Sent: Friday, 21 September 2012 1:53 PM
To: James Boyle
Cc: Jean Heng; Enquiries Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

Further in regards to our conversation earlier, glycerol is appearing in our system as a test we are able to do. However after further conversation with our Melbourne Lab Manager it appears this is not yet a validated analyte and the method is only in our testing stage. So sorry, we are actually unable to analyse for glycerol. Would you like to cancel the request for glycerol? Or would you like us to attempt to source a sub-contract lab who can perform this analysis?

The methyl acrylate testing remains no problem.

Sorry for the confusion.

Regards,

Tammy Lakeland
Quality Manager -Vic
Tammy.Lakeland@mgtlabmark.com.au

mgt LabMark
ENVIRONMENTAL LABORATORIES

2-5 Kingston Town Close
Oakleigh, Vic, 3166
Office:(+61) (3) 8564 5000
Direct:(+61) (3) 8564 5031

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 1:10 PM
To: Tammy Lakeland
Cc: Jean Heng
Subject: ENAUWOLL04107AA- change to CoC

Hi tammy
As discussed, can you please mark these changes to the CoC:

- all sampled marked for 'ester' analysis to be analysed for methyl acrylate **instead**.
- Also, for all samples marked for 'alcohols' , please **also** analyze for glycerol.
- Where a sample is already being analysed for SVOC suite, please **do not** also analyse for phenols (as this is in the svoc suite).

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: Tammy Lakeland
Sent: Friday, 21 September 2012 4:55 PM
To: James Boyle
Cc: Enviro Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

I'll pass on this information to Sample Receipt.

Thanks, have a good weekend.

Regards,

Tammy

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 4:52 PM
To: Tammy Lakeland
Subject: ENAUWOLL04107AA- change to CoC

Hi Tammy

In regards to the sample selection for this job, please don't analyse OCP/OPP, PAH and Phenols if the sample is also marked for SVOC analysis.

WOL # 352482
352720
352721

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: James Boyle
Sent: Friday, 21 September 2012 2:12 PM
To: 'Tammy Lakeland'
Subject: RE: ENAUWOLL04107AA- change to CoC

If you can, please find an accredited lab that will analyse for glycerol.

Kind Regards

JAMES BOYLE
Environmental Scientist

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, 21 September 2012 5:20 PM
To: Sample Receipt 1 Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

Hi Ellen

Sorry, one more change. Can you please analyse sample CTP3 0.4-0.6 for:
SVOCs/VOCs/ PCBs/Alcohol and Methyl Acrylate

Kind Regards

GWK # 352720 SE16874

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: Sample Receipt 1 Syd [mailto:sample_syd_1@mgtlabmark.com.au]
Sent: Friday, 21 September 2012 4:58 PM
To: Tammy Lakeland; James Boyle
Cc: Enviro Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

Hi James,
I shall amended the analysis to fulfil the below request & re-issue the SRA.
Thank you
Ellen

From: Tammy Lakeland
Sent: Friday, 21 September 2012 4:55 PM
To: James Boyle
Cc: Enviro Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

I'll pass on this information to Sample Receipt.

Thanks, have a good weekend.

Regards,

Tammy

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 4:52 PM

V. DATA USABILITY

1.	Data Directly Usable	☒
2.	Data Usable with the following corrections/modifications (see comment below)	☐
3.	Data Not Usable.	☐

COMMENTS:

The Certificates of Analysis for Batches 352482, 352720, 352721 and 352956 indicated that samples were extracted for analysis of methyl acrylates outside the recommended holding time by between 1 to 3 days. This is not considered to significantly impact on the accuracy of the results however it should be noted that the reported concentrations may be marginally less than what is actually present.

Given that the samples were appropriately preserved during transit, should elevated concentrations of acrylate be currently present within the soil at locations tested, this would be likely to be reflected to some degree in the laboratory results. As it is, all samples recorded acrylate concentrations less than the laboratory limit of reporting. This is further supported by field observations – methyl acrylate commonly gives off a distinctive acrid, bitter odour (US EPA 1987), which was not detected during fieldwork.

Methyl acrylates, other than being used in transesterification processes, are also associated with use in leatherworks, textile and paper manufacturing, and was also historically used to produce acrylic fibres and plastic bottles (US EPA, 1987). Based on our knowledge of the site history, it is unlikely that any of these processes occurred on-site. Based on the above lines of evidence, it is considered unlikely that there is methyl acrylates currently present at elevated concentrations on the site.

QA/QC Report Prepared by Alexander Williams

QA/QC Report Reviewed by: Manuel Fernandez

(Reviewer)

mgt LabMark ENVIRONMENTAL LABORATORIES

Certificate of Analysis

Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500

Attention:James Boyle

Report **352482-S-V1**
Client Reference ENAUWOLL04107AA
Received Date Sep 20, 2012

Client Sample ID			**CTP02/0.0-0.1**	**CTP01/0.0-0.2**	**TRIPSPIKE**	**TRIPBLANK**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se15013**	**S12-Se15019**	**S12-Se15025**	**S12-Se15026**
Date Sampled			**Sep 18, 2012**	**Sep 18, 2012**	**Sep 17, 2012**	**Sep 17, 2012**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	-	< 10
TRH C10-C14	50	mg/kg	110	62	-	-
TRH C15-C28	100	mg/kg	< 100	< 100	-	-
TRH C29-C36	100	mg/kg	< 100	< 100	-	-
TRH C10-36 (Total)	100	mg/kg	110	< 100	-	-
Acrylates						
Methyl acrylate	20	mg/kg	< 20	-	-	-
Alcohols						
Ethanol	10	mg/kg	< 10	-	-	-
Isobutanol	10	mg/kg	< 10	-	-	-
Isopropanol	100	mg/kg	< 100	-	-	-
Methanol	10	mg/kg	< 10	-	-	-
n-Butanol*	10	mg/kg	< 10	-	-	-
n-Propanol	10	mg/kg	< 10	-	-	-
BTEX						
Benzene	0.5	mg/kg	-	< 0.5	88%	< 0.5
Toluene	0.5	mg/kg	-	< 0.5	72%	< 0.5
Ethylbenzene	0.5	mg/kg	-	< 0.5	84%	< 0.5
Total m+p-Xylenes	1	mg/kg	-	< 1	86%	< 1
o-Xylene	0.5	mg/kg	-	< 0.5	91%	< 0.5
Xylenes(ortho.meta and para)	1.5	mg/kg	-	< 1.5	88%	< 1.5
Total BTEX	1.5	mg/kg	-	< 1.5	81%	< 1.5
4-Bromofluorobenzene (surr.)	1	%	-	95	94	97
Total Recoverable Hydrocarbons - Draft 2010 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	74	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	74	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
Volatile Organic Compounds (VOC)						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			CTP02/0.0-0.1	CTP01/0.0-0.2	TRIPSPIKE	TRIPBLANK
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se15013	S12-Se15019	S12-Se15025	S12-Se15026
Date Sampled			Sep 18, 2012	Sep 18, 2012	Sep 17, 2012	Sep 17, 2012
Test/Reference	LOR	Unit				
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dibromo-3-chloropropane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	-
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	-
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
2-Butanone (MEK)	5	mg/kg	< 5	-	-	-
2-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	-
2-Hexanone (MBK)	5	mg/kg	< 5	-	-	-
2-Pentanone	5	mg/kg	< 5	-	-	-
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	-
4-Methyl-2-pentanone (MIBK)	5	mg/kg	< 5	-	-	-
Benzene	0.5	mg/kg	< 0.5	-	-	-
Bromobenzene	0.5	mg/kg	< 0.5	-	-	-
Bromodichloromethane	0.5	mg/kg	< 0.5	-	-	-
Bromoform	0.5	mg/kg	< 0.5	-	-	-
Bromomethane	0.5	mg/kg	< 0.5	-	-	-
Carbon disulfide	0.5	mg/kg	< 0.5	-	-	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	-	-
Chlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Chloroethane	0.5	mg/kg	< 0.5	-	-	-
Chloroform	0.5	mg/kg	< 0.5	-	-	-
Chloromethane	0.5	mg/kg	< 0.5	-	-	-
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	-
Dibromochloromethane	0.5	mg/kg	< 0.5	-	-	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	-	-
Ethylbenzene	0.5	mg/kg	< 0.5	-	-	-
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	-	-
Methylene Chloride	0.5	mg/kg	< 0.5	-	-	-
n-Butylbenzene	0.5	mg/kg	< 0.5	-	-	-
n-Propylbenzene	0.5	mg/kg	< 0.5	-	-	-
o-Xylene	0.5	mg/kg	< 0.5	-	-	-
p-Isopropyltoluene	0.5	mg/kg	< 0.5	-	-	-
sec-Butylbenzene	0.5	mg/kg	< 0.5	-	-	-
Styrene	0.5	mg/kg	< 0.5	-	-	-
tert-Butylbenzene	0.5	mg/kg	< 0.5	-	-	-
Tetrachloroethene	0.5	mg/kg	< 0.5	-	-	-
Toluene	0.5	mg/kg	< 0.5	-	-	-
Total m+p-Xylenes	1	mg/kg	< 1	-	-	-
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			CTP02/0.0-0.1	CTP01/0.0-0.2	TRIPSPIKE	TRIPBLANK
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se15013	S12-Se15019	S12-Se15025	S12-Se15026
Date Sampled			Sep 18, 2012	Sep 18, 2012	Sep 17, 2012	Sep 17, 2012
Test/Reference	LOR	Unit				
Trichloroethene	0.5	mg/kg	< 0.5	-	-	-
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	-	-
Vinyl acetate	5	mg/kg	< 5	-	-	-
Vinyl chloride	0.5	mg/kg	< 0.5	-	-	-
Toluene-d8 (surr.)	1	%	91	-	-	-
4-Bromofluorobenzene (surr.)	1	%	105	-	-	-
1.2-Dichloroethane-d4 (surr.)	1	%	130	-	-	-
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	< 1	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH	1	mg/kg	-	< 1	-	-
2-Fluorobiphenyl (surr.)	1	%	-	93	-	-
p-Terphenyl-d14 (surr.)	1	%	-	90	-	-
Semivolatile Organic Compounds (SVOC)						
2-Chloronaphthalene	0.5	mg/kg	< 0.5	-	-	-
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2-Methylnaphthalene	0.5	mg/kg	< 0.5	-	-	-
2-Methylphenol (o-Cresol)	0.5	mg/kg	< 0.5	-	-	-
2-Naphthylamine	0.5	mg/kg	< 0.5	-	-	-
2-Nitroaniline	1	mg/kg	< 1	-	-	-
2-Nitrophenol	0.5	mg/kg	< 0.5	-	-	-
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	< 1	-	-	-
3-Methylcholanthrene	0.5	mg/kg	< 0.5	-	-	-
4-Aminobiphenyl	0.5	mg/kg	< 0.5	-	-	-
4-Bromophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	0.5	mg/kg	< 0.5	-	-	-
4-Chlorophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	-
4.4'-DDD	0.5	mg/kg	< 0.5	-	-	-
4.4'-DDE	0.5	mg/kg	< 0.5	-	-	-
4.4'-DDT	1	mg/kg	< 1	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Acetophenone	0.5	mg/kg	< 0.5	-	-	-
Aldrin	0.5	mg/kg	< 0.5	-	-	-
Aniline	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			CTP02/0.0-0.1	CTP01/0.0-0.2	TRIPSPIKE	TRIPBLANK
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se15013	S12-Se15019	S12-Se15025	S12-Se15026
Date Sampled			Sep 18, 2012	Sep 18, 2012	Sep 17, 2012	Sep 17, 2012
Test/Reference	LOR	Unit				
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	-
Bis(2-chloroethoxy)methane	0.5	mg/kg	< 0.5	-	-	-
Bis(2-ethylhexyl)phthalate	5	mg/kg	< 5	-	-	-
Butyl benzyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Chlorpyrifos	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
Coumaphos	0.5	mg/kg	< 0.5	-	-	-
d-BHC	0.5	mg/kg	< 0.5	-	-	-
Demeton-O	0.5	mg/kg	< 0.5	-	-	-
Demeton-S	0.5	mg/kg	< 0.5	-	-	-
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Di-n-octyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Diazinon	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Dibenzofuran	0.5	mg/kg	< 0.5	-	-	-
Dichlorvos	0.5	mg/kg	< 0.5	-	-	-
Dieldrin	0.5	mg/kg	< 0.5	-	-	-
Diethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dimethoate	0.5	mg/kg	< 0.5	-	-	-
Dimethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Diphenylamine	0.5	mg/kg	< 0.5	-	-	-
Disulfoton	0.5	mg/kg	< 0.5	-	-	-
Endosulfan sulphate	0.5	mg/kg	< 0.5	-	-	-
Endrin	0.5	mg/kg	< 0.5	-	-	-
Endrin aldehyde	0.5	mg/kg	< 0.5	-	-	-
Endrin ketone	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	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
g-BHC (Lindane)	0.5	mg/kg	< 0.5	-	-	-
Heptachlor	0.5	mg/kg	< 0.5	-	-	-
Heptachlor epoxide	0.5	mg/kg	< 0.5	-	-	-
Hexachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	-
Hexachlorocyclopentadiene	2	mg/kg	< 2	-	-	-
Hexachloroethane	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Malathion	0.5	mg/kg	< 0.5	-	-	-
Methoxychlor	0.5	mg/kg	< 0.5	-	-	-
Methyl azinphos	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	-	-	-
N-Nitrosodibutylamine	0.5	mg/kg	< 0.5	-	-	-
N-Nitrosodipropylamine	0.5	mg/kg	< 1	-	-	-
N-Nitrosopiperidine	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			CTP02/0.0-0.1	CTP01/0.0-0.2	TRIPSPIKE	TRIPBLANK
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se15013**	**S12-Se15019**	**S12-Se15025**	**S12-Se15026**
Date Sampled			**Sep 18, 2012**	**Sep 18, 2012**	**Sep 17, 2012**	**Sep 17, 2012**
Test/Reference	LOR	Unit				
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Nitrobenzene	0.5	mg/kg	< 0.5	-	-	-
Parathion	0.5	mg/kg	< 0.5	-	-	-
Pentachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachloronitrobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Phenol	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	-	-	-
Pyrene	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	-	-	-
Phenol-d6 (surr.)	1	%	21	-	-	-
Nitrobenzene-d5 (surr.)	1	%	65	-	-	-
p-Terphenyl-d14 (surr.)	1	%	85	-	-	-
2-Fluorobiphenyl (surr.)	1	%	87	-	-	-
Heavy Metals						
Arsenic	1	mg/kg	4.2	2.7	-	-
Cadmium	0.1	mg/kg	0.6	0.6	-	-
Chromium	2	mg/kg	690	670	-	-
Copper	2	mg/kg	5.0	6.2	-	-
Lead	2	mg/kg	8.1	11	-	-
Mercury	0.05	mg/kg	< 0.05	< 0.05	-	-
Nickel	1	mg/kg	17	20	-	-
Zinc	5	mg/kg	63	61	-	-
% Moisture	0.1	%	4.0	4.1	-	-
Asbestos			ASET Report	-	-	-

Client Sample ID			CTP14/0.0-0.05
Sample Matrix			Soil
mgt-LabMark Sample No.			S12-Se15027
Date Sampled			Sep 18, 2012
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	10	mg/kg	< 10
TRH C10-C14	50	mg/kg	97
TRH C15-C28	100	mg/kg	570
TRH C29-C36	100	mg/kg	270
TRH C10-36 (Total)	100	mg/kg	940
BTEX			
Benzene	0.5	mg/kg	< 0.5
Toluene	0.5	mg/kg	< 0.5
Ethylbenzene	0.5	mg/kg	< 0.5
Total m+p-Xylenes	1	mg/kg	< 1
o-Xylene	0.5	mg/kg	< 0.5
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5
Total BTEX	1.5	mg/kg	< 1.5
4-Bromofluorobenzene (surr.)	1	%	91
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	150
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	150
TRH >C16-C34	100	mg/kg	760
TRH >C34-C40	100	mg/kg	130
Polyaromatic Hydrocarbons (PAH)			
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.7
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	1.0
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	1.3
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	1.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	3.8
Pyrene	0.5	mg/kg	1.1
Total PAH	1	mg/kg	9.4
2-Fluorobiphenyl (surr.)	1	%	91
p-Terphenyl-d14 (surr.)	1	%	89
Heavy Metals			
Arsenic	1	mg/kg	5.9
Cadmium	0.1	mg/kg	0.5
Chromium	2	mg/kg	120
Copper	2	mg/kg	66
Lead	2	mg/kg	9.3
Mercury	0.05	mg/kg	< 0.05

Client Sample ID			**CTP14/0.0-0.05**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**S12-Se15027**
Date Sampled			**Sep 18, 2012**
Test/Reference	LOR	Unit	
Nickel	1	mg/kg	17
Zinc	5	mg/kg	83
% Moisture	0.1	%	3.9

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: E004 Petroleum Hydrocarbons (TPH)	Sydney	Sep 24, 2012	14 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Sydney	Sep 22, 2012	14 Day
Acrylates - Method: GC-FID MGT METHOD 470A & US EPA SW846 METHOD 8000	Melbourne	Sep 25, 2012	5 Day
Alcohols - Method: USEPA 8000 Alcohols	Melbourne	Sep 25, 2012	14 Day
BTEX - Method: E029/E016 BTEX	Sydney	Sep 22, 2012	14 Day
Volatile Organic Compounds (VOC) - Method: E016 Volatile Organic Compounds (VOC)	Sydney	Sep 22, 2012	14 Day
Polyaromatic Hydrocarbons (PAH) - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Sep 24, 2012	14 Day
Semivolatile Organic Compounds (SVOC) - Method: E017 Semivolatile Organic Compounds (SVOC)	Sydney	Sep 22, 2012	14 Day
Metals M8 - Method: E022 Acid Extractable metals in Soils & E026 Mercury	Sydney	Sep 22, 2012	28 Day
% Moisture - Method: E005 Moisture Content	Sydney	Sep 22, 2012	28 Day
Asbestos	Sydney	Sep 22, 2012	

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

ABN 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong			**Order No.:**				**Received:**	Sep 20, 2012 5:30 PM						
Address:	118 Auburn Street			**Report #:**	352482			**Due:**	Sep 28, 2012						
	Wollongong			**Phone:**	02 4201 1400			**Priority:**	5 Day						
	NSW 2500			**Fax:**	02 4201 1401			**Contact Name:**	James Boyle						
Client Job No.:	ENAUWOLL04107AA														
									mgt-LabMark Client Manager: Jean Heng						

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	TRH C6-C9	Alcohols	Metals M8	BTEX	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X						
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**												
TP02/0.0-0.1	Sep 18, 2012		Soil	S12-Se15013	X	X		X		X	X			X	X	X
TP02/0.6-0.7	Sep 18, 2012		Soil	S12-Se15014			X									
TP02/1.0-1.3	Sep 18, 2012		Soil	S12-Se15015			X									
TP02/1.9-2.1	Sep 18, 2012		Soil	S12-Se15016			X									
TP02/2.8-3.0	Sep 18, 2012		Soil	S12-Se15017			X									
TC5	Sep 18, 2012		Soil	S12-Se15018			X									
TP01/0.0-0.2	Sep 18, 2012		Soil	S12-Se15019	X						X	X	X	X		
TP01/0.6-0.7	Sep 18, 2012		Soil	S12-Se15020			X									
TP01/0.8-1.0	Sep 18, 2012		Soil	S12-Se15021			X									

First Reported:Oct 10, 2012

Date Reported:Oct 10, 2012

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Date Reported:Oct 10, 2012

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

web : www.mgtlabmark.com.au e.mail : enviro@mgtlabmark.com.au
ABN – 50 005 085 521

mgt LabMark ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:** Sep 20, 2012 5:30 PM
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:**	352482	**Due:** Sep 28, 2012
		Phone:	02 4201 1400	**Priority:** 5 Day
		Fax:	02 4201 1401	**Contact Name:** James Boyle
Client Job No.:	ENAUWOLL04107AA			

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	TRH C6-C9	Alcohols	Metals M8	BTEX	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
aboratory where analysis is conducted																
elbourne Laboratory - NATA Site # 1254 & 14271								X		X						
ydney Laboratory - NATA Site # 18217					X		X		X		X	X	X	X	X	X
risbane Laboratory - NATA Site # 20794																
xternal Laboratory						X										
TP01/1.8-2.1	Sep 18, 2012		Soil	S12-Se15022			X									
TP01/2.8-3.0	Sep 18, 2012		Soil	S12-Se15023			X									
C6	Sep 18, 2012		Soil	S12-Se15024			X									
RIPSPIKE	Sep 17, 2012		Soil	S12-Se15025								X				
RIPBLANK	Sep 17, 2012		Soil	S12-Se15026					X			X				
TP14/0.0-05	Sep 18, 2012		Soil	S12-Se15027	X						X	X	X	X		
TP14/0.7-0.9	Sep 18, 2012		Soil	S12-Se15028			X									
TP14/1.4-1.6	Sep 18, 2012		Soil	S12-Se15029			X									
TP14/2.1-2.4	Sep 18, 2012		Soil	S12-Se15030			X									
TP14/2.8-3.0	Sep 18, 2012		Soil	S12-Se15031			X									

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ENVIRONMENTAL LABORATORIES

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	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

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Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X						
Sydney Laboratory - NATA Site # 18217					X		X		X		X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TC7		Sep 18, 2012		Soil	S12-Se15032			X								
TP01/0.4-0.6 C		Sep 18, 2012		Soil	S12-Se15033			X								

First Reported:Oct 10, 2012
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Date Reported:Oct 10, 2012

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 an RPD

UNITS

mg/kg:milligrams per Kilogram
mg/L:milligrams per litre
µg/L:micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%:Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 milliltres

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 client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
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 was performed on samples not pertaining to this report, however 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 below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

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	< 10			10	Pass	
TRH C10-C14	mg/kg	< 50			50	Pass	
TRH C15-C28	mg/kg	< 100			100	Pass	
TRH C29-C36	mg/kg	< 100			100	Pass	
Method Blank							
Acrylates GC-FID MGT METHOD 470A & US EPA SW846 METHOD 8000							
Methyl acrylate	mg/kg	< 20			20	Pass	
Method Blank							
Alcohols USEPA 8000 Alcohols							
Ethanol	mg/kg	< 10			10	Pass	
Isobutanol	mg/kg	< 10			10	Pass	
Isopropanol	mg/kg	< 100			100	Pass	
Methanol	mg/kg	< 10			10	Pass	
n-Butanol*	mg/kg	< 10			10	Pass	
n-Propanol	mg/kg	< 10			10	Pass	
Method Blank							
BTEX E029/E016 BTEX							
Benzene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.5			0.5	Pass	
Total m+p-Xylenes	mg/kg	< 1			1	Pass	
o-Xylene	mg/kg	< 0.5			0.5	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 1.5			1.5	Pass	
Total BTEX	mg/kg	< 1.5			1.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - Draft 2010 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							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromo-3-chloropropane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 5			5	Pass	
2-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
2-Hexanone (MBK)	mg/kg	< 5			5	Pass	
2-Pentanone	mg/kg	< 5			5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 5			5	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
n-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
n-Propylbenzene	mg/kg	< 0.5			0.5	Pass	
p-Isopropyltoluene	mg/kg	< 0.5			0.5	Pass	
sec-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
tert-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl acetate	mg/kg	< 5			5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polyaromatic Hydrocarbons (PAH) 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)fluoranthene & Benzo(k)fluoranthene	mg/kg	< 1			1	Pass	
Benzo(g.h.i)perylene	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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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							
Semivolatile Organic Compounds (SVOC) E017 Semivolatile Organic Compounds (SVOC)							
2-Chloronaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2-Methylnaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.5			0.5	Pass	
2-Naphthylamine	mg/kg	< 0.5			0.5	Pass	
2-Nitroaniline	mg/kg	< 1			1	Pass	
2-Nitrophenol	mg/kg	< 0.5			0.5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 1			1	Pass	
3-Methylcholanthrene	mg/kg	< 0.5			0.5	Pass	
4-Aminobiphenyl	mg/kg	< 0.5			0.5	Pass	
4-Bromophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 0.5			0.5	Pass	
4-Chlorophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4.4'-DDD	mg/kg	< 0.5			0.5	Pass	
4.4'-DDE	mg/kg	< 0.5			0.5	Pass	
4.4'-DDT	mg/kg	< 1			1	Pass	
Acetophenone	mg/kg	< 0.5			0.5	Pass	
Aldrin	mg/kg	< 0.5			0.5	Pass	
Aniline	mg/kg	< 0.5			0.5	Pass	
Bis(2-chloroethoxy)methane	mg/kg	< 0.5			0.5	Pass	
Bis(2-ethylhexyl)phthalate	mg/kg	< 5			5	Pass	
Butyl benzyl phthalate	mg/kg	< 0.5			0.5	Pass	
Chlorpyrifos	mg/kg	< 0.5			0.5	Pass	
Coumaphos	mg/kg	< 0.5			0.5	Pass	
d-BHC	mg/kg	< 0.5			0.5	Pass	
Demeton-O	mg/kg	< 0.5			0.5	Pass	
Demeton-S	mg/kg	< 0.5			0.5	Pass	
Di-n-butyl phthalate	mg/kg	< 0.5			0.5	Pass	
Di-n-octyl phthalate	mg/kg	< 0.5			0.5	Pass	
Diazinon	mg/kg	< 0.5			0.5	Pass	
Dibenzofuran	mg/kg	< 0.5			0.5	Pass	
Dichlorvos	mg/kg	< 0.5			0.5	Pass	
Dieldrin	mg/kg	< 0.5			0.5	Pass	
Diethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethoate	mg/kg	< 0.5			0.5	Pass	
Dimethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Diphenylamine	mg/kg	< 0.5			0.5	Pass	
Disulfoton	mg/kg	< 0.5			0.5	Pass	
Endosulfan sulphate	mg/kg	< 0.5			0.5	Pass	
Endrin	mg/kg	< 0.5			0.5	Pass	
Endrin aldehyde	mg/kg	< 0.5			0.5	Pass	
Endrin ketone	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	
g-BHC (Lindane)	mg/kg	< 0.5			0.5	Pass	
Heptachlor	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/kg	< 0.5			0.5	Pass	
Hexachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Hexachlorocyclopentadiene	mg/kg	< 2			2	Pass	
Hexachloroethane	mg/kg	< 0.5			0.5	Pass	
Malathion	mg/kg	< 0.5			0.5	Pass	
Methoxychlor	mg/kg	< 0.5			0.5	Pass	
Methyl azinphos	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	
N-Nitrosodibutylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosodipropylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosopiperidine	mg/kg	< 0.5			0.5	Pass	
Nitrobenzene	mg/kg	< 0.5			0.5	Pass	
Parathion	mg/kg	< 0.5			0.5	Pass	
Pentachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachloronitrobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Phenol	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	
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							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
Mercury	mg/kg	< 0.05			0.05	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
TRH C6-C9	%	96			70-130	Pass	
TRH C10-C14	%	106			70-130	Pass	
LCS - % Recovery							
BTEX E029/E016 BTEX							
Benzene	%	91			70-130	Pass	
Toluene	%	88			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
Total m+p-Xylenes	%	89			70-130	Pass	
o-Xylene	%	91			70-130	Pass	
Xylenes(ortho.meta and para)	%	90			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
TRH >C10-C16	%	105			70-130	Pass	
LCS - % Recovery							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
1.1-Dichloroethane	%	107			75-125	Pass	
1.1-Dichloroethene	%	111			70-130	Pass	
1.1.1-Trichloroethane	%	111			70-130	Pass	
1.1.1.2-Tetrachloroethane	%	106			70-130	Pass	
1.1.2-Trichloroethane	%	108			70-130	Pass	
1.2-Dibromo-3-chloropropane	%	102			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.2-Dibromoethane	%	106			70-130	Pass	
1.2-Dichlorobenzene	%	109			70-130	Pass	
1.2-Dichloroethane	%	102			70-130	Pass	
1.2-Dichloropropane	%	107			70-130	Pass	
1.2.3-Trichloropropane	%	107			70-130	Pass	
1.2.4-Trichlorobenzene	%	107			70-130	Pass	
1.2.4-Trimethylbenzene	%	109			70-130	Pass	
1.3-Dichlorobenzene	%	108			70-130	Pass	
1.3-Dichloropropane	%	107			70-130	Pass	
1.3.5-Trimethylbenzene	%	109			70-130	Pass	
1.4-Dichlorobenzene	%	107			70-130	Pass	
2-Butanone (MEK)	%	101			70-130	Pass	
2-Chlorotoluene	%	108			70-130	Pass	
2-Hexanone (MBK)	%	104			70-130	Pass	
2-Pentanone	%	99			70-130	Pass	
4-Chlorotoluene	%	107			70-130	Pass	
4-Methyl-2-pentanone (MIBK)	%	108			70-130	Pass	
Bromobenzene	%	107			70-130	Pass	
Bromodichloromethane	%	115			70-130	Pass	
Bromoform	%	112			70-130	Pass	
Bromomethane	%	111			70-130	Pass	
Carbon disulfide	%	109			70-130	Pass	
Carbon Tetrachloride	%	129			70-130	Pass	
Chlorobenzene	%	100			70-130	Pass	
Chloroethane	%	112			70-130	Pass	
Chloroform	%	104			70-130	Pass	
Chloromethane	%	118			70-130	Pass	
cis-1.2-Dichloroethene	%	105			70-130	Pass	
cis-1.3-Dichloropropene	%	118			70-130	Pass	
Dibromochloromethane	%	107			70-130	Pass	
Dichlorodifluoromethane	%	112			70-130	Pass	
Hexachlorobutadiene	%	108			70-130	Pass	
Isopropyl benzene (Cumene)	%	107			70-130	Pass	
Methylene Chloride	%	111			70-130	Pass	
n-Butylbenzene	%	108			70-130	Pass	
n-Propylbenzene	%	108			70-130	Pass	
p-Isopropyltoluene	%	108			70-130	Pass	
sec-Butylbenzene	%	108			70-130	Pass	
Styrene	%	106			70-130	Pass	
tert-Butylbenzene	%	109			70-130	Pass	
Tetrachloroethene	%	110			70-130	Pass	
trans-1.2-Dichloroethene	%	104			70-130	Pass	
trans-1.3-Dichloropropene	%	118			70-130	Pass	
Trichloroethene	%	107			70-130	Pass	
Trichlorofluoromethane	%	103			70-130	Pass	
Vinyl acetate	%	111			70-130	Pass	
Vinyl chloride	%	116			70-130	Pass	
LCS - % Recovery							
Polyaromatic Hydrocarbons (PAH) E007 Polyaromatic Hydrocarbons (PAH)							
Acenaphthene	%	91			70-130	Pass	
Acenaphthylene	%	95			70-130	Pass	
Anthracene	%	94			70-130	Pass	
Benz(a)anthracene	%	89			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(a)pyrene	%	88			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	%	90			70-130	Pass	
Benzo(g.h.i)perylene	%	91			70-130	Pass	
Chrysene	%	95			70-130	Pass	
Dibenz(a.h)anthracene	%	92			70-130	Pass	
Fluoranthene	%	95			70-130	Pass	
Fluorene	%	94			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	92			70-130	Pass	
Naphthalene	%	94			70-130	Pass	
Phenanthrene	%	96			70-130	Pass	
Pyrene	%	89			70-130	Pass	
LCS - % Recovery							
Semivolatile Organic Compounds (SVOC) E017 Semivolatile Organic Compounds (SVOC)							
2-Chlorophenol	%	105			70-130	Pass	
4-Chloro-3-methylphenol	%	77			70-130	Pass	
Chlorpyrifos	%	108			70-130	Pass	
Coumaphos	%	119			70-130	Pass	
Demeton-O	%	115			70-130	Pass	
Demeton-S	%	111			70-130	Pass	
Diazinon	%	111			70-130	Pass	
Dichlorvos	%	109			70-130	Pass	
Dimethoate	%	114			70-130	Pass	
Disulfoton	%	110			70-130	Pass	
Ethoprop	%	113			70-130	Pass	
Fenitrothion	%	112			70-130	Pass	
Fensulfothion	%	114			70-130	Pass	
Fenthion	%	110			70-130	Pass	
Malathion	%	115			70-130	Pass	
Methyl azinphos	%	103			70-130	Pass	
Methyl parathion	%	118			70-130	Pass	
Mevinphos	%	109			70-130	Pass	
Monocrotophos	%	104			70-130	Pass	
Parathion	%	107			70-130	Pass	
Pentachlorophenol	%	77			70-130	Pass	
Phenol	%	98			70-130	Pass	
Phorate	%	112			70-130	Pass	
Profenofos	%	110			70-130	Pass	
Prothiofos	%	108			70-130	Pass	
Ronnel	%	110			70-130	Pass	
Stirophos	%	103			70-130	Pass	
Trichloronate	%	110			70-130	Pass	
LCS - % Recovery							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
Mercury	%	97			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	S12-Se15013	CP	%	101			70-130	Pass	
TRH C10-C14	S12-Se15013	CP	%	119			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1					
Naphthalene	S12-Se15013	CP	%	96			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C10	S12-Se15013	CP	%	99			70-130	Pass	
TRH >C10-C16	S12-Se15013	CP	%	114			70-130	Pass	
Spike - % Recovery									
Volatile Organic Compounds (VOC)				Result 1					
1.1-Dichloroethane	S12-Se15013	CP	%	98			75-125	Pass	
1.1-Dichloroethene	S12-Se15013	CP	%	108			70-130	Pass	
1.1.1-Trichloroethane	S12-Se15013	CP	%	107			70-130	Pass	
1.1.1.2-Tetrachloroethane	S12-Se15013	CP	%	98			70-130	Pass	
1.1.2-Trichloroethane	S12-Se15013	CP	%	91			70-130	Pass	
1.2-Dibromo-3-chloropropane	S12-Se15013	CP	%	93			70-130	Pass	
1.2-Dibromoethane	S12-Se15013	CP	%	88			70-130	Pass	
1.2-Dichlorobenzene	S12-Se15013	CP	%	99			70-130	Pass	
1.2-Dichloroethane	S12-Se15013	CP	%	96			70-130	Pass	
1.2-Dichloropropane	S12-Se15013	CP	%	98			70-130	Pass	
1.2.3-Trichloropropane	S12-Se15013	CP	%	98			70-130	Pass	
1.2.4-Trichlorobenzene	S12-Se15013	CP	%	96			70-130	Pass	
1.2.4-Trimethylbenzene	S12-Se15013	CP	%	100			70-130	Pass	
1.3-Dichlorobenzene	S12-Se15013	CP	%	98			70-130	Pass	
1.3-Dichloropropane	S12-Se15013	CP	%	89			70-130	Pass	
1.3.5-Trimethylbenzene	S12-Se15013	CP	%	100			70-130	Pass	
1.4-Dichlorobenzene	S12-Se15013	CP	%	98			70-130	Pass	
2-Butanone (MEK)	S12-Se15013	CP	%	97			70-130	Pass	
2-Chlorotoluene	S12-Se15013	CP	%	99			70-130	Pass	
2-Hexanone (MBK)	S12-Se15013	CP	%	90			70-130	Pass	
2-Pentanone	S12-Se15013	CP	%	100			70-130	Pass	
4-Chlorotoluene	S12-Se15013	CP	%	97			70-130	Pass	
4-Methyl-2-pentanone (MIBK)	S12-Se15013	CP	%	96			70-130	Pass	
Benzene	S12-Se15013	CP	%	97			70-130	Pass	
Bromobenzene	S12-Se15013	CP	%	99			70-130	Pass	
Bromodichloromethane	S12-Se15013	CP	%	106			70-130	Pass	
Bromoform	S12-Se15013	CP	%	109			70-130	Pass	
Bromomethane	S12-Se15013	CP	%	101			70-130	Pass	
Carbon disulfide	S12-Se15013	CP	%	105			70-130	Pass	
Carbon Tetrachloride	S12-Se15013	CP	%	126			70-130	Pass	
Chlorobenzene	S12-Se15013	CP	%	93			70-130	Pass	
Chloroethane	S12-Se15013	CP	%	102			70-130	Pass	
Chloroform	S12-Se15013	CP	%	95			70-130	Pass	
Chloromethane	S12-Se15013	CP	%	105			70-130	Pass	
cis-1.2-Dichloroethene	S12-Se15013	CP	%	95			70-130	Pass	
cis-1.3-Dichloropropene	S12-Se15013	CP	%	104			70-130	Pass	
Dibromochloromethane	S12-Se15013	CP	%	88			70-130	Pass	
Dichlorodifluoromethane	S12-Se15013	CP	%	102			70-130	Pass	
Ethylbenzene	S12-Se15013	CP	%	95			70-130	Pass	
Hexachlorobutadiene	S12-Se15013	CP	%	97			70-130	Pass	
Isopropyl benzene (Cumene)	S12-Se15013	CP	%	106			70-130	Pass	
Methylene Chloride	S12-Se15013	CP	%	107			70-130	Pass	
n-Butylbenzene	S12-Se15013	CP	%	96			70-130	Pass	
n-Propylbenzene	S12-Se15013	CP	%	98			70-130	Pass	
o-Xylene	S12-Se15013	CP	%	106			70-130	Pass	
p-Isopropyltoluene	S12-Se15013	CP	%	98			70-130	Pass	
sec-Butylbenzene	S12-Se15013	CP	%	99			70-130	Pass	
Styrene	S12-Se15013	CP	%	104			70-130	Pass	
tert-Butylbenzene	S12-Se15013	CP	%	100			70-130	Pass	
Tetrachloroethene	S12-Se15013	CP	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Toluene	S12-Se15013	CP	%	92			70-130	Pass	
Total m+p-Xylenes	S12-Se15013	CP	%	104			70-130	Pass	
trans-1.2-Dichloroethene	S12-Se15013	CP	%	102			70-130	Pass	
trans-1.3-Dichloropropene	S12-Se15013	CP	%	104			70-130	Pass	
Trichloroethene	S12-Se15013	CP	%	97			70-130	Pass	
Trichlorofluoromethane	S12-Se15013	CP	%	101			70-130	Pass	
Vinyl acetate	S12-Se15013	CP	%	80			70-130	Pass	
Vinyl chloride	S12-Se15013	CP	%	115			70-130	Pass	
Spike - % Recovery									
Semivolatile Organic Compounds (SVOC)				Result 1					
Chlorpyrifos	S12-Se15663	NCP	%	105			70-130	Pass	
Coumaphos	S12-Se15663	NCP	%	124			70-130	Pass	
Demeton-O	S12-Se15663	NCP	%	91			70-130	Pass	
Demeton-S	S12-Se15663	NCP	%	86			70-130	Pass	
Diazinon	S12-Se15663	NCP	%	104			70-130	Pass	
Dichlorvos	S12-Se15663	NCP	%	99			70-130	Pass	
Dimethoate	S12-Se15663	NCP	%	108			70-130	Pass	
Disulfoton	S12-Se15663	NCP	%	89			70-130	Pass	
Ethoprop	S12-Se15663	NCP	%	108			70-130	Pass	
Fenitrothion	S12-Se15663	NCP	%	111			70-130	Pass	
Fensulfothion	S12-Se15663	NCP	%	127			70-130	Pass	
Fenthion	S12-Se15663	NCP	%	106			70-130	Pass	
Malathion	S12-Se15663	NCP	%	113			70-130	Pass	
Methyl azinphos	S12-Se15663	NCP	%	111			70-130	Pass	
Methyl parathion	S12-Se15663	NCP	%	119			70-130	Pass	
Mevinphos	S12-Se15663	NCP	%	105			70-130	Pass	
Monocrotophos	S12-Se15663	NCP	%	94			70-130	Pass	
Parathion	S12-Se15663	NCP	%	104			70-130	Pass	
Phorate	S12-Se15663	NCP	%	101			70-130	Pass	
Profenofos	S12-Se15663	NCP	%	116			70-130	Pass	
Prothiofos	S12-Se15663	NCP	%	109			70-130	Pass	
Ronnel	S12-Se15663	NCP	%	104			70-130	Pass	
Stirophos	S12-Se15663	NCP	%	106			70-130	Pass	
Trichloronate	S12-Se15663	NCP	%	106			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Mercury	S12-Se16842	NCP	%	84			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Xylenes(ortho.meta and para)	S12-Se16801	NCP	%	94			70-130	Pass	
Spike - % Recovery									
Polyaromatic Hydrocarbons (PAH)				Result 1					
Acenaphthene	S12-Se16884	NCP	%	102			70-130	Pass	
Acenaphthylene	S12-Se16884	NCP	%	97			70-130	Pass	
Anthracene	S12-Se16884	NCP	%	99			70-130	Pass	
Benz(a)anthracene	S12-Se16884	NCP	%	94			70-130	Pass	
Benzo(a)pyrene	S12-Se16884	NCP	%	92			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se16884	NCP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	S12-Se16884	NCP	%	95			70-130	Pass	
Chrysene	S12-Se16884	NCP	%	97			70-130	Pass	
Dibenz(a.h)anthracene	S12-Se16884	NCP	%	96			70-130	Pass	
Fluoranthene	S12-Se16884	NCP	%	100			70-130	Pass	
Fluorene	S12-Se16884	NCP	%	100			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Indeno(1.2.3-cd)pyrene	S12-Se16884	NCP	%	96			70-130	Pass	
Naphthalene	S12-Se16884	NCP	%	100			70-130	Pass	
Phenanthrene	S12-Se16884	NCP	%	100			70-130	Pass	
Pyrene	S12-Se16884	NCP	%	100			70-130	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S12-Se15013	CP	mg/kg	< 10	< 10	<1	30%	Pass	
TRH C10-C14	S12-Se15013	CP	mg/kg	110	110	6.0	30%	Pass	
TRH C15-C28	S12-Se15013	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH C29-C36	S12-Se15013	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Acrylates				Result 1	Result 2	RPD			
Methyl acrylate	S12-Se15013	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Alcohols				Result 1	Result 2	RPD			
Ethanol	S12-Se15013	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Isobutanol	S12-Se15013	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Isopropanol	S12-Se15013	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Methanol	S12-Se15013	CP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Butanol*	S12-Se15013	CP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Propanol	S12-Se15013	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
TRH C6-C10	S12-Se15013	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S12-Se15013	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S12-Se15013	CP	mg/kg	74	61	18	30%	Pass	
TRH >C16-C34	S12-Se15013	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S12-Se15013	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
1.1-Dichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromo-3-chloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Chlorotoluene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Hexanone (MBK)	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Pentanone	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
4-Chlorotoluene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Bromobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
Bromodichloromethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Carbon disulfide	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Chloroform	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
cis-1.2-Dichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Hexachlorobutadiene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
n-Butylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
n-Propylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
p-Isopropyltoluene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
sec-Butylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
tert-Butylbenzene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	S12-Se18196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Vinyl acetate	S12-Se18196	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Vinyl chloride	S12-Se18196	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
2-Chloronaphthalene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Chlorophenol	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylnaphthalene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Naphthylamine	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Nitroaniline	S12-Se15013	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2-Nitrophenol	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S12-Se15013	CP	mg/kg	< 1	< 1	<1	30%	Pass	
3-Methylcholanthrene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Aminobiphenyl	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Bromophenyl phenyl ether	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorophenyl phenyl ether	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDD	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDE	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDT	S12-Se15013	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Acenaphthene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acetophenone	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aldrin	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aniline	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
Anthracene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-chloroethoxy)methane	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-ethylhexyl)phthalate	S12-Se15013	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Butyl benzyl phthalate	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorpyrifos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Coumaphos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
d-BHC	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-O	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-S	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-butyl phthalate	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-octyl phthalate	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diazinon	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenzofuran	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorvos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dieldrin	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diethyl phthalate	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethoate	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethyl phthalate	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diphenylamine	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Disulfoton	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endosulfan sulphate	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin aldehyde	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin ketone	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethoprop	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenitrothion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fensulfothion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenthion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
g-BHC (Lindane)	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Heptachlor	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Heptachlor epoxide	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobenzene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorocyclopentadiene	S12-Se15013	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Hexachloroethane	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Malathion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methoxychlor	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl azinphos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl parathion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Mevinphos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Monocrotophos	S12-Se15754	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
N-Nitrosodibutylamine	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
N-Nitrosodipropylamine	S12-Se15013	CP	mg/kg	< 1	< 1	<1	30%	Pass	
N-Nitrosopiperidine	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
Naphthalene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Nitrobenzene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Parathion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorobenzene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachloronitrobenzene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S12-Se15013	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Phenanthrene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenol	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	9.0	30%	Pass	
Phorate	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Profenofos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Prothiofos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S12-Se15013	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ronnel	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Stirophos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloronate	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Mercury	S12-Se14299	NCP	mg/kg	0.16	0.29	60	30%	Fail	Q15
Duplicate									
BTEX				Result 1	Result 2	RPD			
Xylenes(ortho.meta and para)	S12-Se16801	NCP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Total BTEX	S12-Se16801	NCP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se16884	NCP	mg/kg	< 1	< 1	<1	30%	Pass	

Comments

Please note: Asbestos analysed by ASET (Job : ASET31072/34252/1-1) NATA Accreditation : 14484

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.
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Jean Heng	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
James Norford	Senior Analyst-Metal (NSW)
Laura Schofield	Senior Analyst-Volatile (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)

Dr. Bob Symons
Laboratory Manager

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref : ASET31072/ 34252 / 1 - 1
Your ref : 352482
NATA Accreditation No: 14484

26 September 2012

MGT- Labmark Environmental Pty Ltd
Unit F3, Building F, 16 Mars Road
Lane Cove NSW 2066

Attn: Dr Robert Symons
Laboratory & Technical Manager

Dear Robert

Asbestos Identification
This report presents the results of one sample, forwarded by MGT- Labmark Environmental Pty Ltd on 24 September 2012, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

2. Methods : The sample was examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method. **(Safer Environment Method 1.)**

3. Results : **Sample No. 1. ASET31072 / 34252 / 1. CTP02/0.0 - 0.1 - Se15013.**
Approx dimensions 6.7 cm x 5.4 cm x 3.6 cm
The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of coal like material.
No asbestos detected.

Analysed and reported by,

Laxman Dias. BSc
Analyst / Approved Identifier.
Approved Signatory

NATA
WORLD RECOGNISED
ACCREDITATION

This document is issued in accordance with NATA's Accreditation requirements. Accredited for compliance with ISO/IEC 17025.

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

e.mail : enviro@mgtlabmark.com.au
web : www.mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352482 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Sep 28, 2012 5 Day James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail	% Moisture	Asbestos	HOLD	Methyl acrylate	TRH C6-C9	Alcohols	Metals M8	BTEX	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted												
Melbourne Laboratory - NATA Site # 1254 & 14271				X		X						
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												
TP02/0.0-0.1	Sep 18, 2012		Soil	S12-Se15013	X	X		X		X	X			X	X	X
TP02/0.6-0.7	Sep 18, 2012		Soil	S12-Se15014			X									
TP02/1.0-1.3	Sep 18, 2012		Soil	S12-Se15015			X									
TP02/1.9-2.1	Sep 18, 2012		Soil	S12-Se15016			X									
TP02/2.8-3.0	Sep 18, 2012		Soil	S12-Se15017			X									
TC5	Sep 18, 2012		Soil	S12-Se15018			X									
TP01/0.0-0.2	Sep 18, 2012		Soil	S12-Se15019	X						X	X	X	X		
TP01/0.6-0.7	Sep 18, 2012		Soil	S12-Se15020			X									
TP01/0.8-1.0	Sep 18, 2012		Soil	S12-Se15021			X									

Melbourne
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Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352482 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Sep 28, 2012 5 Day James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	TRH C6-C9	Alcohols	Metals M8	BTEX	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X						
Sydney Laboratory - NATA Site # 18217					X		X		X		X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP01/1.8-2.1	Sep 18, 2012		Soil	S12-Se15022			X									
TP01/2.8-3.0	Sep 18, 2012		Soil	S12-Se15023			X									
C6	Sep 18, 2012		Soil	S12-Se15024			X									
RIPSPIKE	Sep 17, 2012		Soil	S12-Se15025								X				
RIPBLANK	Sep 17, 2012		Soil	S12-Se15026					X			X				
TP14/0.0-05	Sep 18, 2012		Soil	S12-Se15027	X						X	X	X	X		
TP14/0.7-0.9	Sep 18, 2012		Soil	S12-Se15028			X									
TP14/1.4-1.6	Sep 18, 2012		Soil	S12-Se15029			X									
TP14/2.1-2.4	Sep 18, 2012		Soil	S12-Se15030			X									
TP14/2.8-3.0	Sep 18, 2012		Soil	S12-Se15031			X									

Melbourne
3-5 Kingston Town Close
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ABN 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street	**Report #:**	352482	**Due:**	Sep 28, 2012
	Wollongong	**Phone:**	02 4201 1400	**Priority:**	5 Day
	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	TRH C6-C9	Alcohols	Metals M8	BTEX	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X						
Sydney Laboratory - NATA Site # 18217					X		X		X		X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TC7		Sep 18, 2012		Soil	S12-Se15032			X								
TP01/0.4-0.6 C		Sep 18, 2012		Soil	S12-Se15033			X								

mgt LabMark ENVIRONMENTAL LABORATORIES

ABN – 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

Sydney
Unit F6, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 8215 6222
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Coffey Environments Pty Ltd Wollongong**
Contact name:	James Boyle
Client job number:	ENAUWOLL04107AA
COC number:	9611-9612
Turn around time:	5 Day
Date/Time received:	Sep 20, 2012 5:30 PM
mgt-LabMark reference:	**352482**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by mgt-LabMark Sample Receipt : 13 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

TS/TB120917.10 received | Alcohols & Methyl Acrylate performed by mgt-Labmark Melbourne | Asbestos conducted by ASET | SRA reissued removal of PAH/Phenols/OCP/OPP upon samples requiring SVOC analysis Samples received by the laboratory after 4pm are deemed to have been received the following working day.

Contact notes

If you have any questions with respect to these samples please contact:

Jean Heng on Phone : (+61) (2) 9900 8400 or by e.mail: jean.heng@mgtlabmark.com.au

Results will be delivered electronically via e.mail to James Boyle - james_boyle@coffey.com.

coffey

Chain of Custody

NO: 9611

Laboratory Quotation / Order No:

Job No: ENAWOLL04107AA Sheet 1 of 2

Dispatch to: (Address & Phone No.) MGT Laboratory, Unit F3, 16 Mars Road, WEST LANE COVE " NSW 2066	Sampled by: A. Williams	Consigning Officer: A. Williams Date Dispatched: 19/9/12 #352482
Attention: " " sample Receipt	Project Manager: (report results to) J. Boyle	Courier Service: MRS Courier Consignment Note No: 418820

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Alex Williams	19/9/12	08:00	CHRISTINE	19/9/12	1:45

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
SE15013	SOIL	Icey 250mL jar Ziplock bag	CTP02/0.0-0.1	18/9/12					
14			CTP02/0.6-0.7						
15			CTP02/1.0-1.3						
16			CTP02/1.9-2.1						
17			CTP02/2.8-3.0						
18			QC5						
19			CTP01/0.0-0.2						
20			/0.6-0.7						
21			/0.8-1.0						
22			/1.8-2.1						
23			/2.8-3.0						
24			QC6						
25			Trip Spike	17/9/12					
26			Trip Blank						
27			CTP14/0.0-0.05	18/9/12					
28			/0.7-0.9						
29			/1.4-1.6						

Special Laboratory Instructions:

Detection Limits:

Turnaround Required: Standard.

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

64220/9-06

Checked upon electronic

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

coffey

Chain of Custody

No: 9612

Laboratory Quotation / Order No:

Job No: ENAUWOLL04107AA

Sheet 2 of 2

Dispatch to: (Address & Phone No.)	Sampled by:	Consigning Officer: A. Williams Date Dispatched:
Attention:	Project Manager: (report results to)	Courier Service: Consignment Note No: # 352482

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			CHRISTINE CA	14/9/12	1:45PM

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:	Sample Condition on Receipt
SE15030			CTP14/2.1-2.4	14/9/12					
31			2.8-3.0						
32			QC7						
33			CTP01/0.4-0.6 RC						
—									

Special Laboratory Instructions:

Detection Limits:

Turnaround Required:

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

64220/9-06

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

coffey

Chain of Custody

NO: 9611

Laboratory Quotation / Order No:

Job No: ENAUWOLL04107AA

Sheet 1 of 2

Dispatch to: (Address & Phone No.) MAT Laboratory, Unit F3, 16 Mars Road, WEST LANE COVE, NSW 2066	Sampled by: A. Williams	Consigning Officer: A. Williams Date Dispatched: 19/9/12
Attention: " " sample Receipt	Project Manager: (report results to) J. Boyle	Courier Service: MRS Courier Consignment Note No: 418820 # 352482

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Alex Williams	19/9/12	08:00	Ellen WG mgt Edmark	200912	17:30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: **	SVOC	VOC	phenols	asbestos	alcohols*	esters	[illegible]	asbestos	TOH C6-C9			Sample Condition on Receipt
SE15013	SOIL	Ice, 250mL jar, ziplock bag	CTP02/0.0-0.1	18/9/12		✓		✓	✓	✓	✓	✓	✓	✓						
14			CTP02/0.6-0.7																	
15			CTP02/1.0-1.3																	
16			CTP02/1.9-2.1																	
17			CTP02/2.8-3.0																	
18			QC5																	
19			CTP01/0.0-0.2		✓	✓	✓	✓												
20			/0.6-0.7																	
21			/0.8-1.0																	
22			/1.8-2.1																	
23			/2.8-3.0																	
24			QC6																	
25			Trip Spike	17/9/12		[illegible]	✓													
26			Trip Blank				✓										✓			
27			CTP14/0.0-0.05	18/9/12	✓	✓	✓	✓												
28			/0.7-0.9																	
29			/1.4-1.6																	

Special Laboratory Instructions: ** As, Cd, Cr, Cu, Pb, Ni, Hg, Zn

* incl ethanol + methanol

Detection Limits:

Turnaround Required: Standard.

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Checked upon despatch

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

642209-06

coffey

Chain of Custody

No: 9612

Laboratory Quotation / Order No:

Job No: ENAUWOLL04107AA

Sheet 2 of 2

Dispatch to: (Address & Phone No.) 1	Sampled by: 11	Consigning Officer: A. Williams Date Dispatched:
Attention: 11	Project Manager: (report results to) 11	Courier Service: 11 Consignment Note No: 11 #352482

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
11	11	11		200912	17:32

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	MAHs = BTEX	Metals:											Sample Condition on Receipt
30	11	11	CTP14/2.1-2.4	18/9/12															
31			↓ 2.8-3.0	↓															
32			QC7																
33			CTP01/0.4-0.6 RC																

Special Laboratory Instructions: 11

Detection Limits:

Turnaround Required: 11

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

04/2009-06

#352482 #352721 #352720.

Tammy.

Enquiries Syd

From: Tammy Lakeland
Sent: Friday, 21 September 2012 2:38 PM
To: James Boyle
Cc: Jean Heng; Enquiries Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

Thanks for your phone call. As discussed, I have searched the NATA website but have not found a suitable option for accredited testing of glycerol. Thus, as per your instructions, I have cancelled the request for this compound.

We will now continue the contract review process for these relevant reports.

Regards,

Tammy

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 2:12 PM
To: Tammy Lakeland
Subject: RE: ENAUWOLL04107AA- change to CoC

If you can, please find an accredited lab that will analyse for glycerol.

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: Tammy Lakeland [mailto:Tammy.Lakeland@mgtlabmark.com.au]
Sent: Friday, 21 September 2012 1:53 PM
To: James Boyle
Cc: Jean Heng; Enquiries Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

Further in regards to our conversation earlier, glycerol is appearing in our system as a test we are able to do. However after further conversation with our Melbourne Lab Manager it appears this is not yet a validated analyte and the method is only in our testing stage. So sorry, we are actually unable to analyse for glycerol. Would you like to cancel the request for glycerol? Or would you like us to attempt to source a sub-contract lab who can perform this analysis?

The methyl acrylate testing remains no problem.

Sorry for the confusion.

Regards,

Tammy Lakeland
Quality Manager -Vic
Tammy.Lakeland@mgtlabmark.com.au

mgt LabMark
ENVIRONMENTAL LABORATORIES

2-5 Kingston Town Close
Oakleigh, Vic, 3166
Office:(+61) (3) 8564 5000
Direct:(+61) (3) 8564 5031

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 1:10 PM
To: Tammy Lakeland
Cc: Jean Heng
Subject: ENAUWOLL04107AA- change to CoC

Hi tammy
As discussed, can you please mark these changes to the CoC:

- all sampled marked for 'ester' analysis to be analysed for methyl acrylate **instead**.
- Also, for all samples marked for 'alcohols' , please **also** analyze for glycerol.
- Where a sample is already being analysed for SVOC suite, please **do not** also analyse for phenols (as this is in the svoc suite).

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: Tammy Lakeland
Sent: Friday, 21 September 2012 4:55 PM
To: James Boyle
Cc: Enviro Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

I'll pass on this information to Sample Receipt.

Thanks, have a good weekend.

Regards,

Tammy

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 4:52 PM
To: Tammy Lakeland
Subject: ENAUWOLL04107AA- change to CoC

Hi Tammy

In regards to the sample selection for this job, please don't analyse OCP/OPP, PAH and Phenols if the sample is also marked for SVOC analysis.

WOL # 352482
352720
352721

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: James Boyle
Sent: Friday, 21 September 2012 2:12 PM
To: 'Tammy Lakeland'
Subject: RE: ENAUWOLL04107AA- change to CoC

If you can, please find an accredited lab that will analyse for glycerol.

Kind Regards

JAMES BOYLE
Environmental Scientist

mgt LabMark ENVIRONMENTAL LABORATORIES

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.

Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500

Attention:James Boyle

Report	**352721-S**
Client Reference	ENAUWOLL04107AA
Received Date	Sep 20, 2012

Client Sample ID			**CTP07/0.0-0.05**	**CTP08/0.0-0.1**	**CTP08/1.0-1.2**	**CTP09/0.0-0.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se16884**	**S12-Se16891**	**S12-Se16893**	**S12-Se16898**
Date Sampled			**Sep 19, 2012**	**Sep 19, 2012**	**Sep 19, 2012**	**Sep 19, 2012**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	< 10	< 10
TRH C10-C14	50	mg/kg	< 50	< 50	< 50	< 50
TRH C15-C28	100	mg/kg	< 100	< 100	< 100	< 100
TRH C29-C36	100	mg/kg	< 100	< 100	< 100	< 100
TRH C10-36 (Total)	100	mg/kg	< 100	< 100	< 100	< 100
Acrylates						
Methyl acrylate	20	mg/kg	-	< 20	-	< 20
Alcohols						
Ethanol	10	mg/kg	-	< 10	-	< 10
Isobutanol	10	mg/kg	-	< 10	-	< 10
Isopropanol	10	mg/kg	-	< 10	-	< 10
Methanol	10	mg/kg	-	< 10	-	< 10
n-Butanol*	10	mg/kg	-	< 10	-	< 10
n-Propanol	10	mg/kg	-	< 10	-	< 10
BTEX						
Benzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Toluene	0.5	mg/kg	< 0.5	-	< 0.5	-
Ethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total m+p-Xylenes	1	mg/kg	< 1	-	< 1	-
o-Xylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	-	< 1.5	-
Total BTEX	1.5	mg/kg	< 1.5	-	< 1.5	-
4-Bromofluorobenzene (surr.)	1	%	96	-	93	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Volatile Organic Compounds (VOC)						
1.1-Dichloroethane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.1-Dichloroethene	0.5	mg/kg	-	< 0.5	-	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	< 0.5

Client Sample ID			CTP07/0.0-0.05	CTP08/0.0-0.1	CTP08/1.0-1.2	CTP09/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16884	S12-Se16891	S12-Se16893	S12-Se16898
Date Sampled			Sep 19, 2012	Sep 19, 2012	Sep 19, 2012	Sep 19, 2012
Test/Reference	LOR	Unit				
1.1.2-Trichloroethane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2-Dibromo-3-chloropropane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2-Dibromoethane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2-Dichloroethane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2-Dichloropropane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
1.3-Dichloropropane	0.5	mg/kg	-	< 0.5	-	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Butanone (MEK)	5	mg/kg	-	< 5	-	< 5
2-Chlorotoluene	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Hexanone (MBK)	5	mg/kg	-	< 5	-	< 5
2-Pentanone	5	mg/kg	-	< 5	-	< 5
4-Chlorotoluene	0.5	mg/kg	-	< 0.5	-	< 0.5
4-Methyl-2-pentanone (MIBK)	5	mg/kg	-	< 5	-	< 5
Benzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Bromobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Bromodichloromethane	0.5	mg/kg	-	< 0.5	-	< 0.5
Bromoform	0.5	mg/kg	-	< 0.5	-	< 0.5
Bromomethane	5	mg/kg	-	< 5	-	< 5
Carbon disulfide	0.5	mg/kg	-	< 0.5	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	-	< 0.5	-	< 0.5
Chlorobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Chloroethane	5	mg/kg	-	< 5	-	< 5
Chloroform	0.5	mg/kg	-	< 0.5	-	< 0.5
Chloromethane	5	mg/kg	-	< 5	-	< 5
cis-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibromochloromethane	0.5	mg/kg	-	< 0.5	-	< 0.5
Dichlorodifluoromethane	5	mg/kg	-	< 5	-	< 5
Ethylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	< 0.5	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	-	< 0.5	-	< 0.5
Methylene Chloride	5	mg/kg	-	< 5	-	< 5
n-Butylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
n-Propylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
o-Xylene	0.5	mg/kg	-	< 0.5	-	< 0.5
p-Isopropyltoluene	0.5	mg/kg	-	< 0.5	-	< 0.5
sec-Butylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Styrene	0.5	mg/kg	-	< 0.5	-	< 0.5
tert-Butylbenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Tetrachloroethene	0.5	mg/kg	-	< 0.5	-	< 0.5
Toluene	0.5	mg/kg	-	< 0.5	-	< 0.5
Total m+p-Xylenes	1	mg/kg	-	< 1	-	< 1
trans-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	< 0.5

Client Sample ID			CTP07/0.0-0.05	CTP08/0.0-0.1	CTP08/1.0-1.2	CTP09/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16884	S12-Se16891	S12-Se16893	S12-Se16898
Date Sampled			Sep 19, 2012	Sep 19, 2012	Sep 19, 2012	Sep 19, 2012
Test/Reference	LOR	Unit				
Trichloroethene	0.5	mg/kg	-	< 0.5	-	< 0.5
Trichlorofluoromethane	5	mg/kg	-	< 5	-	< 5
Vinyl acetate	5	mg/kg	-	< 5	-	< 5
Vinyl chloride	2	mg/kg	-	< 2	-	< 2
Toluene-d8 (surr.)	1	%	-	99	-	99
4-Bromofluorobenzene (surr.)	1	%	-	95	-	102
1.2-Dichloroethane-d4 (surr.)	1	%	-	99	-	106
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	< 0.5
Total PCB	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibutylchlorendate (surr.)	1	%	-	71	-	71
Polyaromatic Hydrocarbons (PAH)						
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)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	-	< 1	-
Benzo(g.h.i)perylene	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	-
Phenanthrene	0.5	mg/kg	< 0.5	-	1.3	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH	1	mg/kg	< 1	-	1.3	-
2-Fluorobiphenyl (surr.)	1	%	92	-	91	-
p-Terphenyl-d14 (surr.)	1	%	92	-	89	-
Semivolatile Organic Compounds (SVOC)						
2-Chloronaphthalene	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Chlorophenol	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Methylnaphthalene	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Methylphenol (o-Cresol)	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Naphthylamine	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Nitroaniline	1	mg/kg	-	< 1	-	< 1
2-Nitrophenol	0.5	mg/kg	-	< 0.5	-	< 0.5
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	-	< 1	-	< 1
3-Methylcholanthrene	0.5	mg/kg	-	< 0.5	-	< 0.5
4-Aminobiphenyl	0.5	mg/kg	-	< 0.5	-	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	-	< 0.5	-	< 0.5
4-Chloro-3-methylphenol	0.5	mg/kg	-	< 0.5	-	< 0.5
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	< 0.5	-	< 0.5
4.4'-DDD	0.5	mg/kg	-	< 0.5	-	< 0.5

Client Sample ID			CTP07/0.0-0.05	CTP08/0.0-0.1	CTP08/1.0-1.2	CTP09/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16884	S12-Se16891	S12-Se16893	S12-Se16898
Date Sampled			Sep 19, 2012	Sep 19, 2012	Sep 19, 2012	Sep 19, 2012
Test/Reference	LOR	Unit				
4.4'-DDE	0.5	mg/kg	-	< 0.5	-	< 0.5
4.4'-DDT	1	mg/kg	-	< 1	-	< 1
Acenaphthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Acetophenone	0.5	mg/kg	-	< 0.5	-	< 0.5
Aldrin	0.5	mg/kg	-	< 0.5	-	< 0.5
Aniline	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(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	< 0.5	-	< 0.5
Bis(2-ethylhexyl)phthalate	5	mg/kg	-	< 5	-	< 5
Butyl benzyl phthalate	0.5	mg/kg	-	< 0.5	-	< 0.5
Chlorpyrifos	0.5	mg/kg	-	< 0.5	-	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	-	< 0.5
Coumaphos	0.5	mg/kg	-	< 0.5	-	< 0.5
d-BHC	0.5	mg/kg	-	< 0.5	-	< 0.5
Demeton-O	0.5	mg/kg	-	< 0.5	-	< 0.5
Demeton-S	0.5	mg/kg	-	< 0.5	-	< 0.5
Di-n-butyl phthalate	0.5	mg/kg	-	< 0.5	-	< 0.5
Di-n-octyl phthalate	0.5	mg/kg	-	< 0.5	-	< 0.5
Diazinon	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibenzofuran	0.5	mg/kg	-	< 0.5	-	< 0.5
Dichlorvos	0.5	mg/kg	-	< 0.5	-	< 0.5
Dieldrin	0.5	mg/kg	-	< 0.5	-	< 0.5
Diethyl phthalate	0.5	mg/kg	-	< 0.5	-	< 0.5
Dimethoate	0.5	mg/kg	-	< 0.5	-	< 0.5
Dimethyl phthalate	0.5	mg/kg	-	< 0.5	-	< 0.5
Diphenylamine	0.5	mg/kg	-	< 0.5	-	< 0.5
Disulfoton	0.5	mg/kg	-	< 0.5	-	< 0.5
Endosulfan sulphate	0.5	mg/kg	-	< 0.5	-	< 0.5
Endrin	0.5	mg/kg	-	< 0.5	-	< 0.5
Endrin aldehyde	0.5	mg/kg	-	< 0.5	-	< 0.5
Endrin ketone	0.5	mg/kg	-	< 0.5	-	< 0.5
Ethoprop	0.5	mg/kg	-	< 0.5	-	< 0.5
Fenitrothion	0.5	mg/kg	-	< 0.5	-	< 0.5
Fensulfothion	0.5	mg/kg	-	< 0.5	-	< 0.5
Fenthion	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
g-BHC (Lindane)	0.5	mg/kg	-	< 0.5	-	< 0.5
Heptachlor	0.5	mg/kg	-	< 0.5	-	< 0.5
Heptachlor epoxide	0.5	mg/kg	-	< 0.5	-	< 0.5
Hexachlorobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	< 0.5	-	< 0.5
Hexachlorocyclopentadiene	2	mg/kg	-	< 2	-	< 2
Hexachloroethane	0.5	mg/kg	-	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5

Client Sample ID			CTP07/0.0-0.05	CTP08/0.0-0.1	CTP08/1.0-1.2	CTP09/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se16884	S12-Se16891	S12-Se16893	S12-Se16898
Date Sampled			Sep 19, 2012	Sep 19, 2012	Sep 19, 2012	Sep 19, 2012
Test/Reference	LOR	Unit				
Malathion	0.5	mg/kg	-	< 0.5	-	< 0.5
Methoxychlor	0.5	mg/kg	-	< 0.5	-	< 0.5
Methyl azinphos	0.5	mg/kg	-	< 0.5	-	< 0.5
Methyl parathion	0.5	mg/kg	-	< 0.5	-	< 0.5
Mevinphos	0.5	mg/kg	-	< 0.5	-	< 0.5
Monocrotophos	10	mg/kg	-	< 10	-	< 10
N-Nitrosodibutylamine	0.5	mg/kg	-	< 0.5	-	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	-	< 1	-	< 1
N-Nitrosopiperidine	0.5	mg/kg	-	< 0.5	-	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	-	< 0.5
Nitrobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Parathion	0.5	mg/kg	-	< 0.5	-	< 0.5
Pentachlorobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	-	< 0.5	-	< 0.5
Pentachlorophenol	1	mg/kg	-	< 1	-	< 1
Phenanthrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Phenol	0.5	mg/kg	-	< 0.5	-	< 0.5
Phorate	0.5	mg/kg	-	< 0.5	-	< 0.5
Profenofos	0.5	mg/kg	-	< 0.5	-	< 0.5
Prothiofos	0.5	mg/kg	-	< 0.5	-	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Ronnel	0.5	mg/kg	-	< 0.5	-	< 0.5
Stirophos	0.5	mg/kg	-	< 0.5	-	< 0.5
Trichloronate	0.5	mg/kg	-	< 0.5	-	< 0.5
Phenol-d6 (surr.)	1	%	-	90	-	84
Nitrobenzene-d5 (surr.)	1	%	-	73	-	76
p-Terphenyl-d14 (surr.)	1	%	-	93	-	89
2-Fluorobiphenyl (surr.)	1	%	-	91	-	89
Heavy Metals						
Arsenic	1	mg/kg	8.7	4.0	2.7	14
Cadmium	0.1	mg/kg	< 0.1	0.2	0.2	0.3
Chromium	2	mg/kg	6.3	< 2	< 2	< 2
Copper	2	mg/kg	< 2	< 2	20	< 2
Lead	2	mg/kg	2.1	3.8	21	< 2
Mercury	0.05	mg/kg	< 0.05	< 0.05	0.14	< 0.05
Nickel	1	mg/kg	< 1	< 1	3.3	1.3
Zinc	5	mg/kg	< 5	< 5	33	6.1
% Moisture	0.1	%	5.3	9.1	7.5	8.1
Asbestos			-	-	-	ASET report

Client Sample ID			**CTP09/0.9-1.0**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**S12-Se16900**
Date Sampled			**Sep 19, 2012**
Test/Reference	LOR	Unit	
Asbestos			ASET report

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: E004 Petroleum Hydrocarbons (TPH)	Sydney	Sep 22, 2012	14 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Sydney	Sep 22, 2012	14 Day
Acrylates - Method: GC-FID MGT METHOD 470A & US EPA SW846 METHOD 8000	Melbourne	Sep 25, 2012	5 Day
Alcohols - Method: USEPA 8000 Alcohols	Melbourne	Sep 25, 2012	14 Day
BTEX - Method: E029/E016 BTEX	Sydney	Sep 22, 2012	14 Day
Volatile Organic Compounds (VOC) - Method: E016 Volatile Organic Compounds (VOC)	Sydney	Sep 22, 2012	14 Day
Polychlorinated Biphenyls (PCB) - Method: E013 Polychlorinated Biphenyls (PCB)	Sydney	Sep 22, 2012	14 Day
Polyaromatic Hydrocarbons (PAH) - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Sep 22, 2012	14 Day
Semivolatile Organic Compounds (SVOC) - Method: E017 Semivolatile Organic Compounds (SVOC)	Sydney	Sep 22, 2012	14 Day
Metals M8 - Method: E022 Acid Extractable metals in Soils & E026 Mercury	Sydney	Sep 22, 2012	28 Day
% Moisture - Method: E005 Moisture Content	Sydney	Sep 22, 2012	28 Day
Asbestos	Sydney	Sep 22, 2012	

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

web : www.mgtlabmark.com.au
e.mail : enviro@mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street	**Report #:**	352721	**Due:**	Sep 28, 2012
	Wollongong	**Phone:**	02 4201 1400	**Priority:**	5 Day
	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail	% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted												
Melbourne Laboratory - NATA Site # 1254 & 14271				X	X							
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												
TP07/0.0-05	Sep 19, 2012		Soil	S12-Se16884	X					X	X		X	X		
TP07/0.1-0.2	Sep 19, 2012		Soil	S12-Se16885			X									
TP07/0.5-0.6	Sep 19, 2012		Soil	S12-Se16886			X									
TP07/1.1-1.3	Sep 19, 2012		Soil	S12-Se16887			X									
TP07/1.8-2.0	Sep 19, 2012		Soil	S12-Se16888			X									
TP07/2.4-2.5	Sep 19, 2012		Soil	S12-Se16889			X									
QC8	Sep 19, 2012		Soil	S12-Se16890			X									
TP08/0.0-0.1	Sep 19, 2012		Soil	S12-Se16891	X			X	X	X		X		X	X	X

First Reported:Sep 28, 2012
Date Reported:Sep 28, 2012

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Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

ABN 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

ENVIRONMENTAL LABORATORIES

mgt LabMark

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**	
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:**	352721
		Phone:	02 4201 1400
		Fax:	02 4201 1401
Client Job No.:	ENAUWOLL04107AA		

Received:	Sep 20, 2012 5:30 PM
Due:	Sep 28, 2012
Priority:	5 Day
Contact Name:	James Boyle

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP08/0.6-0.7	Sep 19, 2012		Soil	S12-Se16892			X									
TP08/1.0-1.2	Sep 19, 2012		Soil	S12-Se16893	X					X	X		X	X		
TP08/1.5-1.7	Sep 19, 2012		Soil	S12-Se16894			X									
TP08/2.1-2.3	Sep 19, 2012		Soil	S12-Se16895			X									
TP08/2.7-75	Sep 19, 2012		Soil	S12-Se16896			X									
C10	Sep 19, 2012		Soil	S12-Se16897			X									
TP09/0.0-0.1	Sep 19, 2012		Soil	S12-Se16898	X	X		X	X	X		X		X	X	X
TP09/0.6-0.7	Sep 19, 2012		Soil	S12-Se16899			X									
TP09/0.9-1.0	Sep 19, 2012		Soil	S12-Se16900		X										
TP09/1.3-1.5	Sep 19, 2012		Soil	S12-Se16901			X									

First Reported:Sep 28, 2012

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ENVIRONMENTAL LABORATORIES

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Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352721 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Sep 28, 2012 5 Day James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP09/2.0-2.2	Sep 19, 2012		Soil	S12-Se16902			X									
TP09/2.7-2.9	Sep 19, 2012		Soil	S12-Se16903			X									
C9	Sep 19, 2012		Soil	S12-Se16904			X									
TP09/0.9-0ACM	Sep 19, 2012		Other	S12-Se16905			X									

First Reported:Sep 28, 2012
Date Reported:Sep 28, 2012

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Date Reported:Sep 28, 2012

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 an RPD

UNITS

mg/kg:milligrams per Kilogram
mg/L:milligrams per litre
µg/L:micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%:Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 milliltres

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 client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
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 was performed on samples not pertaining to this report, however 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 below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

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	< 10			10	Pass	
Method Blank							
Alcohols USEPA 8000 Alcohols							
Isopropanol	mg/kg	< 10			10	Pass	
Method Blank							
BTEX E029/E016 BTEX							
Benzene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.5			0.5	Pass	
Total m+p-Xylenes	mg/kg	< 1			1	Pass	
o-Xylene	mg/kg	< 0.5			0.5	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 1.5			1.5	Pass	
Total BTEX	mg/kg	< 1.5			1.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - Draft 2010 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	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
TRH C6-C9	%	108			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
Naphthalene	%	120			70-130	Pass	
TRH C6-C10	%	113			70-130	Pass	
LCS - % Recovery							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
Benzene	%	103			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
o-Xylene	%	100			70-130	Pass	
Toluene	%	101			70-130	Pass	
Total m+p-Xylenes	%	99			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	S12-Se16884	CP	%	95			70-130	Pass	
TRH C10-C14	S12-Se16884	CP	%	84			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S12-Se16884	CP	%	99			70-130	Pass	
Toluene	S12-Se16884	CP	%	95			70-130	Pass	
Ethylbenzene	S12-Se16884	CP	%	94			70-130	Pass	
Total m+p-Xylenes	S12-Se16884	CP	%	93			70-130	Pass	
o-Xylene	S12-Se16884	CP	%	95			70-130	Pass	
Xylenes(ortho.meta and para)	S12-Se16884	CP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Naphthalene	S12-Se16884	CP	%	112			70-130	Pass	
TRH C6-C10	S12-Se16884	CP	%	93			70-130	Pass	
TRH >C10-C16	S12-Se16884	CP	%	78			70-130	Pass	
Spike - % Recovery									
Polyaromatic Hydrocarbons (PAH)				Result 1					
Acenaphthene	S12-Se16884	CP	%	102			70-130	Pass	
Acenaphthylene	S12-Se16884	CP	%	97			70-130	Pass	
Anthracene	S12-Se16884	CP	%	99			70-130	Pass	
Benz(a)anthracene	S12-Se16884	CP	%	94			70-130	Pass	
Benzo(a)pyrene	S12-Se16884	CP	%	92			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se16884	CP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	S12-Se16884	CP	%	95			70-130	Pass	
Chrysene	S12-Se16884	CP	%	97			70-130	Pass	
Dibenz(a.h)anthracene	S12-Se16884	CP	%	96			70-130	Pass	
Fluoranthene	S12-Se16884	CP	%	100			70-130	Pass	
Fluorene	S12-Se16884	CP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S12-Se16884	CP	%	96			70-130	Pass	
Naphthalene	S12-Se16884	CP	%	100			70-130	Pass	
Phenanthrene	S12-Se16884	CP	%	100			70-130	Pass	
Pyrene	S12-Se16884	CP	%	100			70-130	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S12-Se16884	CP	mg/kg	< 10	< 10	<1	30%	Pass	
TRH C10-C14	S12-Se16884	CP	mg/kg	< 50	< 50	7.0	30%	Pass	
TRH C15-C28	S12-Se16884	CP	mg/kg	< 100	< 100	11	30%	Pass	
TRH C29-C36	S12-Se16884	CP	mg/kg	< 100	< 100	7.0	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Toluene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total m+p-Xylenes	S12-Se16884	CP	mg/kg	< 1	< 1	<1	30%	Pass	
o-Xylene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Xylenes(ortho.meta and para)	S12-Se16884	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Total BTEX	S12-Se16884	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
Naphthalene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S12-Se16884	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S12-Se16884	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S12-Se16884	CP	mg/kg	< 50	< 50	8.0	30%	Pass	
TRH >C16-C34	S12-Se16884	CP	mg/kg	< 100	< 100	12	30%	Pass	
TRH >C34-C40	S12-Se16884	CP	mg/kg	< 100	< 100	4.0	30%	Pass	
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Acenaphthene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se16884	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Benzo(g.h.i)perylene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Dibenz(a.h)anthracene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S12-Se16884	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	S12-Se17865	NCP	mg/kg	3.8	11	97	30%	Fail	Q15
Cadmium	S12-Se17865	NCP	mg/kg	< 0.1	0.10	9.0	30%	Pass	
Chromium	S12-Se17865	NCP	mg/kg	11	15	32	30%	Fail	Q15
Copper	S12-Se17865	NCP	mg/kg	12	12	1.0	30%	Pass	
Lead	S12-Se17865	NCP	mg/kg	13	16	25	30%	Pass	
Mercury	S12-Se16873	NCP	mg/kg	< 0.05	< 0.05	12	30%	Pass	
Nickel	S12-Se17865	NCP	mg/kg	12	11	6.0	30%	Pass	
Zinc	S12-Se17865	NCP	mg/kg	15	17	10	30%	Pass	
Duplicate									
Acrylates				Result 1	Result 2	RPD			
Methyl acrylate	S12-Se16891	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Alcohols				Result 1	Result 2	RPD			
Ethanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Isobutanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Isopropanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Methanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Butanol*	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Propanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
2-Chloronaphthalene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Chlorophenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylnaphthalene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Naphthylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Nitroaniline	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2-Nitrophenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
3-Methylcholanthrene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Aminobiphenyl	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Bromophenyl phenyl ether	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorophenyl phenyl ether	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acetophenone	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aniline	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-chloroethoxy)methane	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-ethylhexyl)phthalate	S12-Se15013	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Butyl benzyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorpyrifos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Coumaphos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-O	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-S	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
Di-n-butyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-octyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diazinon	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenzofuran	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorvos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diethyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethoate	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diphenylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Disulfoton	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethoprop	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenitrothion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fensulfothion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenthion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorocyclopentadiene	S12-Se15013	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Hexachloroethane	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Malathion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl azinphos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl parathion	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Mevinphos	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
N-Nitrosodibutylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
N-Nitrosodipropylamine	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
N-Nitrosopiperidine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Nitrobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachloronitrobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Phenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	9.0	30%	Pass	
Phorate	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ronnel	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloronate	S12-Se15754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Please note: Asbestos analysed by ASET (Job : ASET31044/34224/1-2) NATA Accreditation : 14484

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.
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Jean Heng	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
James Norford	Senior Analyst-Metal (NSW)
Laura Schofield	Senior Analyst-Volatile (NSW)
Ryan Hamilton	Senior Analyst-Organic (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

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET31044/ 34224 / 1 - 2
Your ref: 352721
NATA Accreditation No: 14484

25 September 2012

MGT- Labmark Environmental Pty Ltd
Unit F3, Building F, 16 Mars Road
Lane Cove NSW 2066

Attn: Dr Robert Symons
Laboratory & Technical Manager

Dear Robert

Asbestos Identification
This report presents the results of two samples, forwarded by MGT- Labmark Environmental Pty Ltd on 21 September 2012, for analysis for asbestos.

1.Introduction: Two samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Safer Environment Method 1.)**

3. Results : **Sample No. 1. ASET31044 / 34224 / 1. CTP09 - 0.0-0.1 - Se16898**
Approx dimensions 6.0 cm x 6.0 cm x 2.6 cm
The sample consisted of a mixture of clayish soil, stones, fragments of plaster and cement like material.
No asbestos detected.

Sample No. 2. ASET31044 / 34224 / 2. CTP09 - 0.9-1.0 - Se16900
Approx dimensions 6.0 cm x 6.0 cm x 3.0 cm
The sample consisted of a mixture of clayish soil, stones, fragments of plaster and cement.
No asbestos detected.

Analysed and reported by,

Nisansala Maddage. BSc(Hons)
Environmental Scientist/Approved Identifier

Mahen De Silva . BSc. MSc. Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Signatory

NATA
WORLD RECOGNISED
ACCREDITATION

This document is issued in accordance with NATA's Accreditation requirements. Accredited for compliance with ISO/IEC 17025.

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

web : www.mgtlabmark.com.au
e.mail : enviro@mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street	**Report #:**	352721	**Due:**	Sep 28, 2012
	Wollongong	**Phone:**	02 4201 1400	**Priority:**	5 Day
	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail	% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted												
Melbourne Laboratory - NATA Site # 1254 & 14271				X	X							
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												
TP07/0.0-05	Sep 19, 2012		Soil	S12-Se16884	X					X	X		X	X		
TP07/0.1-0.2	Sep 19, 2012		Soil	S12-Se16885			X									
TP07/0.5-0.6	Sep 19, 2012		Soil	S12-Se16886			X									
TP07/1.1-1.3	Sep 19, 2012		Soil	S12-Se16887			X									
TP07/1.8-2.0	Sep 19, 2012		Soil	S12-Se16888			X									
TP07/2.4-2.5	Sep 19, 2012		Soil	S12-Se16889			X									
C8	Sep 19, 2012		Soil	S12-Se16890			X									
TP08/0.0-0.1	Sep 19, 2012		Soil	S12-Se16891	X			X	X	X		X		X	X	X

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
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ABN 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

ENVIRONMENTAL LABORATORIES

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mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP08/0.6-0.7	Sep 19, 2012		Soil	S12-Se16892			X									
TP08/1.0-1.2	Sep 19, 2012		Soil	S12-Se16893	X					X	X		X	X		
TP08/1.5-1.7	Sep 19, 2012		Soil	S12-Se16894			X									
TP08/2.1-2.3	Sep 19, 2012		Soil	S12-Se16895			X									
TP08/2.7-75	Sep 19, 2012		Soil	S12-Se16896			X									
C10	Sep 19, 2012		Soil	S12-Se16897			X									
TP09/0.0-0.1	Sep 19, 2012		Soil	S12-Se16898	X	X		X	X	X		X		X	X	X
TP09/0.6-0.7	Sep 19, 2012		Soil	S12-Se16899			X									
TP09/0.9-1.0	Sep 19, 2012		Soil	S12-Se16900		X										
TP09/1.3-1.5	Sep 19, 2012		Soil	S12-Se16901			X									

Melbourne
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ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 20, 2012 5:30 PM
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352721 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Sep 28, 2012 5 Day James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP09/2.0-2.2	Sep 19, 2012		Soil	S12-Se16902			X									
TP09/2.7-2.9	Sep 19, 2012		Soil	S12-Se16903			X									
C9	Sep 19, 2012		Soil	S12-Se16904			X									
TP09/0.9-0ACM	Sep 19, 2012		Other	S12-Se16905			X									

mgt LabMark ENVIRONMENTAL LABORATORIES

ABN – 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

Sydney
Unit F6, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 8215 6222
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd Wollongong**

Contact name: James Boyle
Client job number: ENAUWOLL04107AA
COC number: 9613-14
Turn around time: 5 Day
Date/Time received: Sep 20, 2012 5:30 PM
mgt-LabMark reference: **352721**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by mgt-LabMark Sample Receipt : 16 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Alcohols & Esters performed by mgt-Labmark Melbourne | Asbestos conducted by ASET | SRA reissued removal of PAH/Phenols/OCP/OPP upon samples requiring SVOC analysis
Samples received by the laboratory after 4pm are deemed to have been received the following working day.

Contact notes

If you have any questions with respect to these samples please contact:

Jean Heng on Phone : (+61) (2) 9900 8400 or by e.mail: jean.heng@mgtlabmark.com.au

Results will be delivered electronically via e.mail to James Boyle - james_boyle@coffey.com.

coffey

Chain of Custody

No: 9613

Laboratory Quotation / Order No:

Job No: ENAUWOLL04107AA Sheet 1 of 2

Dispatch to: (Address & Phone No.) MGT Laboratory Unit F3, 16 Mars Road WEST LANE COVE NSW 2066	Sampled by: A. Williams	Consigning Officer: A. Williams Date Dispatched: 20/9/12
Attention: Sample Receipt	Project Manager: (report results to) J. Boyle	Courier Service: ALE Blowier Consignment Note No: #352721

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Williams	20/9/12	08:00	Eleni Wong MGT Labmark [signature]	200912	17:30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	~~Metals~~ = BTEX	Metals: *	~~[illegible]~~ VOCs	SVOCs	PCBs	OCP/PCB	Asbestos	Esters	phenols	Alcohol *	TPH			Sample Condition on Receipt
SE16884	SOIL	~~CTP07~~ Ice; 250mL jar, Ziplock bag	CTP07/0.0-0.05	19/9/12	✓	✓	✓	✓												
85	↓	↓	/0.1-0.2	↓																
86			/0.5-0.6																	
87			/1.1-1.3																	
88			/1.8-2.0																	
89			↓ /2.4-2.5																	
90			QC8																	
91			CTP08/0.0-0.1			✓		✓	✓	✓	✓	✓		✓	✓	✓				
92			/0.6-0.7																	
93			/1.0-1.2		✓	✓	✓	✓												
94			/1.5-1.7																	
95			/2.1-2.3																	
96			↓ /2.7-2.75																	
97			QC10																	
98			CTP09/0.0-0.1					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
99			/0.6-0.7																	
900	↓	↓	↓ /0.9-1.0									✓								

Special Laboratory Instructions: Hg, Cr, Cu, Pb, Zn, ~~[illegible]~~, Ni, Cd, As

* incl. methanol + ethanol

Detection Limits:

Turnaround Required: Standard

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

64220/9-06

coffey

Chain of Custody

No: 9614

Laboratory Quotation / Order No:

Job No: ENAUWOLL09107AA

Sheet 2 of 2

Dispatch to: (Address & Phone No.) 〃	Sampled by: 〃	Consigning Officer: A. Williams Date Dispatched: 20/9/12
Attention: 〃	Project Manager: (report results to) 〃	Courier Service: M&B Couriers Consignment Note No: # 352721

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
〃	〃	〃		200912	17:30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals:	Asbestos ID										Sample Condition on Receipt
SE16901	〃	〃	CTP09/1-3-1.5	19/9/12															
902			/2.0-2.2																
903			/2.7-2.9																
904			QC9																
905	Material	Ziplock only	CTP09/0.9-1.0 ACM						/										

Special Laboratory Instructions: 〃

Detection Limits:

Turnaround Required: 〃

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

6422/09-06

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

#352482 #352721 #352720.

Tammy.

Enquiries Syd

From: Tammy Lakeland
Sent: Friday, 21 September 2012 2:38 PM
To: James Boyle
Cc: Jean Heng; Enquiries Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

Thanks for your phone call. As discussed, I have searched the NATA website but have not found a suitable option for accredited testing of glycerol. Thus, as per your instructions, I have cancelled the request for this compound.

We will now continue the contract review process for these relevant reports.

Regards,

Tammy

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 2:12 PM
To: Tammy Lakeland
Subject: RE: ENAUWOLL04107AA- change to CoC

If you can, please find an accredited lab that will analyse for glycerol.

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: Tammy Lakeland [mailto:Tammy.Lakeland@mgtlabmark.com.au]
Sent: Friday, 21 September 2012 1:53 PM
To: James Boyle
Cc: Jean Heng; Enquiries Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

Further in regards to our conversation earlier, glycerol is appearing in our system as a test we are able to do. However after further conversation with our Melbourne Lab Manager it appears this is not yet a validated analyte and the method is only in our testing stage. So sorry, we are actually unable to analyse for glycerol. Would you like to cancel the request for glycerol? Or would you like us to attempt to source a sub-contract lab who can perform this analysis?

The methyl acrylate testing remains no problem.

Sorry for the confusion.

Regards,

Tammy Lakeland
Quality Manager -Vic
Tammy.Lakeland@mgtlabmark.com.au

mgt LabMark
ENVIRONMENTAL LABORATORIES

2-5 Kingston Town Close
Oakleigh, Vic, 3166
Office:(+61) (3) 8564 5000
Direct:(+61) (3) 8564 5031

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 1:10 PM
To: Tammy Lakeland
Cc: Jean Heng
Subject: ENAUWOLL04107AA- change to CoC

Hi tammy
As discussed, can you please mark these changes to the CoC:

- all sampled marked for 'ester' analysis to be analysed for methyl acrylate **instead**.
- Also, for all samples marked for 'alcohols' , please **also** analyze for glycerol.
- Where a sample is already being analysed for SVOC suite, please **do not** also analyse for phenols (as this is in the svoc suite).

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: Tammy Lakeland
Sent: Friday, 21 September 2012 4:55 PM
To: James Boyle
Cc: Enviro Syd
Subject: RE: ENAUWOLL04107AA- change to CoC

James,

I'll pass on this information to Sample Receipt.

Thanks, have a good weekend.

Regards,

Tammy

From: James Boyle [mailto:James_Boyle@coffey.com]
Sent: Friday, September 21, 2012 4:52 PM
To: Tammy Lakeland
Subject: ENAUWOLL04107AA- change to CoC

Hi Tammy

In regards to the sample selection for this job, please don't analyse OCP/OPP, PAH and Phenols if the sample is also marked for SVOC analysis.

WOL # 352482
352720
352721

Kind Regards

JAMES BOYLE
Environmental Scientist

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1400 F +61 2 4201 1401 M +61 417 646 476
coffey.com

From: James Boyle
Sent: Friday, 21 September 2012 2:12 PM
To: 'Tammy Lakeland'
Subject: RE: ENAUWOLL04107AA- change to CoC

If you can, please find an accredited lab that will analyse for glycerol.

Kind Regards

JAMES BOYLE
Environmental Scientist

mgt LabMark ENVIRONMENTAL LABORATORIES

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.

Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500

Attention:James Boyle

Report	**352956-S**
Client Reference	ENAUWOLL04107AA
Received Date	Sep 24, 2012

Client Sample ID			**CTP 10/0.0-0.15**	**CTP 10/2.2-2.4**	**CTP 11/0.0-0.1**	**CTP 11/0.6-0.8**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se19516**	**S12-Se19519**	**S12-Se19520**	**S12-Se19521**
Date Sampled			**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	< 10	< 10
TRH C10-C14	50	mg/kg	< 50	< 50	< 50	< 50
TRH C15-C28	100	mg/kg	< 100	< 100	< 100	< 100
TRH C29-C36	100	mg/kg	< 100	< 100	< 100	< 100
TRH C10-36 (Total)	100	mg/kg	< 100	< 100	< 100	< 100
Acrylates						
Methyl acrylate	20	mg/kg	-	-	< 20	-
Alcohols						
Ethanol	10	mg/kg	-	-	< 10	-
Isobutanol	10	mg/kg	-	-	< 10	-
Isopropanol	100	mg/kg	-	-	< 100	-
Methanol	10	mg/kg	-	-	< 10	-
n-Butanol*	10	mg/kg	-	-	< 10	-
n-Propanol	10	mg/kg	-	-	< 10	-
BTEX						
Benzene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Toluene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Ethylbenzene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Total m+p-Xylenes	1	mg/kg	< 1	< 1	-	< 1
o-Xylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	< 1.5	-	< 1.5
Total BTEX	1.5	mg/kg	< 1.5	< 1.5	-	< 1.5
4-Bromofluorobenzene (surr.)	1	%	99	90	-	96
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	110
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Volatile Organic Compounds (VOC)						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			CTP 10/0.0-0.15	CTP 10/2.2-2.4	CTP 11/0.0-0.1	CTP 11/0.6-0.8
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se19516	S12-Se19519	S12-Se19520	S12-Se19521
Date Sampled			Sep 21, 2012	Sep 21, 2012	Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit				
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromo-3-chloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Butanone (MEK)	5	mg/kg	-	-	< 5	-
2-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
2-Hexanone (MBK)	5	mg/kg	-	-	< 5	-
2-Pentanone	5	mg/kg	-	-	< 5	-
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	5	mg/kg	-	-	< 5	-
Benzene	0.5	mg/kg	-	-	< 0.5	-
Bromobenzene	0.5	mg/kg	-	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromoform	0.5	mg/kg	-	-	< 0.5	-
Bromomethane	5	mg/kg	-	-	< 5	-
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Chloroethane	5	mg/kg	-	-	< 5	-
Chloroform	0.5	mg/kg	-	-	< 0.5	-
Chloromethane	5	mg/kg	-	-	< 5	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Dichlorodifluoromethane	5	mg/kg	-	-	< 5	-
Ethylbenzene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	-
Methylene Chloride	5	mg/kg	-	-	< 5	-
n-Butylbenzene	0.5	mg/kg	-	-	< 0.5	-
n-Propylbenzene	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.5	mg/kg	-	-	< 0.5	-
p-Isopropyltoluene	0.5	mg/kg	-	-	< 0.5	-
sec-Butylbenzene	0.5	mg/kg	-	-	< 0.5	-
Styrene	0.5	mg/kg	-	-	< 0.5	-
tert-Butylbenzene	0.5	mg/kg	-	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.5	mg/kg	-	-	< 0.5	-
Total m+p-Xylenes	1	mg/kg	-	-	< 1	-

Client Sample ID			CTP 10/0.0-0.15	CTP 10/2.2-2.4	CTP 11/0.0-0.1	CTP 11/0.6-0.8
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se19516**	**S12-Se19519**	**S12-Se19520**	**S12-Se19521**
Date Sampled			**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**
Test/Reference	LOR	Unit				
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	-	< 0.5	-
Trichlorofluoromethane	5	mg/kg	-	-	< 5	-
Vinyl acetate	5	mg/kg	-	-	< 5	-
Vinyl chloride	2	mg/kg	-	-	< 2	-
Toluene-d8 (surr.)	1	%	-	-	93	-
4-Bromofluorobenzene (surr.)	1	%	-	-	99	-
1.2-Dichloroethane-d4 (surr.)	1	%	-	-	104	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PCB	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	79	73
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	1.6
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	2.0
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	< 1	-	4.1
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	2.3
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	2.2
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	4.4
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	1.7
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	1.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	4.0
Total PAH	1	mg/kg	< 1	< 1	-	24
2-Fluorobiphenyl (surr.)	1	%	92	96	-	94
p-Terphenyl-d14 (surr.)	1	%	96	105	-	78
Semivolatile Organic Compounds (SVOC)						
2-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	-
2-Methylnaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Methylphenol (o-Cresol)	0.5	mg/kg	-	-	< 0.5	-
2-Naphthylamine	0.5	mg/kg	-	-	< 0.5	-
2-Nitroaniline	1	mg/kg	-	-	< 1	-
2-Nitrophenol	0.5	mg/kg	-	-	< 0.5	-
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	-	-	< 1	-
3-Methylcholanthrene	0.5	mg/kg	-	-	< 0.5	-
4-Aminobiphenyl	0.5	mg/kg	-	-	< 0.5	-
4-Bromophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			CTP 10/0.0-0.15	CTP 10/2.2-2.4	CTP 11/0.0-0.1	CTP 11/0.6-0.8
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se19516	S12-Se19519	S12-Se19520	S12-Se19521
Date Sampled			Sep 21, 2012	Sep 21, 2012	Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit				
4-Chloro-3-methylphenol	0.5	mg/kg	-	-	< 0.5	-
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-
4.4'-DDD	0.5	mg/kg	-	-	< 0.5	-
4.4'-DDE	0.5	mg/kg	-	-	< 0.5	-
4.4'-DDT	1	mg/kg	-	-	< 1	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Acetophenone	0.5	mg/kg	-	-	< 0.5	-
Aldrin	0.5	mg/kg	-	-	< 0.5	-
Aniline	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	-	< 0.5	-
Bis(2-ethylhexyl)phthalate	5	mg/kg	-	-	< 5	-
Butyl benzyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Chlorpyrifos	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Coumaphos	0.5	mg/kg	-	-	< 0.5	-
d-BHC	0.5	mg/kg	-	-	< 0.5	-
Demeton-O	0.5	mg/kg	-	-	< 0.5	-
Demeton-S	0.5	mg/kg	-	-	< 0.5	-
Di-n-butyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-octyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Diazinon	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Dibenzofuran	0.5	mg/kg	-	-	< 0.5	-
Dichlorvos	0.5	mg/kg	-	-	< 0.5	-
Dieldrin	0.5	mg/kg	-	-	< 0.5	-
Diethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethoate	0.5	mg/kg	-	-	< 0.5	-
Dimethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Diphenylamine	0.5	mg/kg	-	-	< 0.5	-
Disulfoton	0.5	mg/kg	-	-	< 0.5	-
Endosulfan sulphate	0.5	mg/kg	-	-	< 0.5	-
Endrin	0.5	mg/kg	-	-	< 0.5	-
Endrin aldehyde	0.5	mg/kg	-	-	< 0.5	-
Endrin ketone	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	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
g-BHC (Lindane)	0.5	mg/kg	-	-	< 0.5	-
Heptachlor	0.5	mg/kg	-	-	< 0.5	-
Heptachlor epoxide	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobenzene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			CTP 10/0.0-0.15	CTP 10/2.2-2.4	CTP 11/0.0-0.1	CTP 11/0.6-0.8
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se19516**	**S12-Se19519**	**S12-Se19520**	**S12-Se19521**
Date Sampled			**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**
Test/Reference	LOR	Unit				
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorocyclopentadiene	2	mg/kg	-	-	< 2	-
Hexachloroethane	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Malathion	0.5	mg/kg	-	-	< 0.5	-
Methoxychlor	0.5	mg/kg	-	-	< 0.5	-
Methyl azinphos	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	-
N-Nitrosodibutylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosodipropylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosopiperidine	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Nitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Parathion	0.5	mg/kg	-	-	< 0.5	-
Pentachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachloronitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachlorophenol	1	mg/kg	-	-	< 1	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Phenol	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	-
Pyrene	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	-
Phenol-d6 (surr.)	1	%	-	-	73	-
Nitrobenzene-d5 (surr.)	1	%	-	-	77	-
p-Terphenyl-d14 (surr.)	1	%	-	-	98	-
2-Fluorobiphenyl (surr.)	1	%	-	-	86	-
Heavy Metals						
Arsenic	1	mg/kg	1.7	1.7	5.3	4.1
Cadmium	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Chromium	2	mg/kg	4.7	9.6	6.6	14
Copper	2	mg/kg	< 2	98	< 2	55
Lead	2	mg/kg	2.6	13	< 2	14
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	1	mg/kg	2.9	6.9	1.1	9.1
Zinc	5	mg/kg	< 5	44	< 5	300
% Moisture	0.1	%	4.5	5.0	4.8	7.1
Asbestos			-	-	-	ASET Report

Client Sample ID			CTP 12/0.0-0.1	CTP 12/0.3-0.5	CTP 12/0.6-0.7	CTP 13/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se19524	S12-Se19525	S12-Se19526	S12-Se19528
Date Sampled			Sep 21, 2012	Sep 21, 2012	Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	10	mg/kg	< 10	< 10	-	< 10
TRH C10-C14	50	mg/kg	< 50	< 50	-	< 50
TRH C15-C28	100	mg/kg	< 100	< 100	-	< 100
TRH C29-C36	100	mg/kg	< 100	< 100	-	< 100
TRH C10-36 (Total)	100	mg/kg	< 100	< 100	-	< 100
Acrylates						
Methyl acrylate	20	mg/kg	< 20	-	-	< 20
Alcohols						
Ethanol	10	mg/kg	< 10	-	-	< 10
Isobutanol	10	mg/kg	< 10	-	-	< 10
Isopropanol	100	mg/kg	< 100	-	-	< 100
Methanol	10	mg/kg	< 10	-	-	< 10
n-Butanol*	10	mg/kg	< 10	-	-	< 10
n-Propanol	10	mg/kg	< 10	-	-	< 10
BTEX						
Benzene	0.5	mg/kg	-	< 0.5	-	-
Toluene	0.5	mg/kg	-	< 0.5	-	-
Ethylbenzene	0.5	mg/kg	-	< 0.5	-	-
Total m+p-Xylenes	1	mg/kg	-	< 1	-	-
o-Xylene	0.5	mg/kg	-	< 0.5	-	-
Xylenes(ortho.meta and para)	1.5	mg/kg	-	< 1.5	-	-
Total BTEX	1.5	mg/kg	-	< 1.5	-	-
4-Bromofluorobenzene (surr.)	1	%	-	99	-	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	-	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	-	< 100
Volatile Organic Compounds (VOC)						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dibromo-3-chloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			CTP 12/0.0-0.1	CTP 12/0.3-0.5	CTP 12/0.6-0.7	CTP 13/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se19524	S12-Se19525	S12-Se19526	S12-Se19528
Date Sampled			Sep 21, 2012	Sep 21, 2012	Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit				
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Butanone (MEK)	5	mg/kg	< 5	-	-	< 5
2-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Hexanone (MBK)	5	mg/kg	< 5	-	-	< 5
2-Pentanone	5	mg/kg	< 5	-	-	< 5
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Methyl-2-pentanone (MIBK)	5	mg/kg	< 5	-	-	< 5
Benzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromoform	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromomethane	5	mg/kg	< 5	-	-	< 5
Carbon disulfide	0.5	mg/kg	< 0.5	-	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	-	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Chloroethane	5	mg/kg	< 5	-	-	< 5
Chloroform	0.5	mg/kg	< 0.5	-	-	< 0.5
Chloromethane	5	mg/kg	< 5	-	-	< 5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Dichlorodifluoromethane	5	mg/kg	< 5	-	-	< 5
Ethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	-	< 0.5
Methylene Chloride	5	mg/kg	< 5	-	-	< 5
n-Butylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
n-Propylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
o-Xylene	0.5	mg/kg	< 0.5	-	-	< 0.5
p-Isopropyltoluene	0.5	mg/kg	< 0.5	-	-	< 0.5
sec-Butylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Styrene	0.5	mg/kg	< 0.5	-	-	< 0.5
tert-Butylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
Toluene	0.5	mg/kg	< 0.5	-	-	< 0.5
Total m+p-Xylenes	1	mg/kg	< 1	-	-	< 1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
Trichlorofluoromethane	5	mg/kg	< 5	-	-	< 5
Vinyl acetate	5	mg/kg	< 5	-	-	< 5
Vinyl chloride	2	mg/kg	< 2	-	-	< 2
Toluene-d8 (surr.)	1	%	95	-	-	93
4-Bromofluorobenzene (surr.)	1	%	108	-	-	96
1.2-Dichloroethane-d4 (surr.)	1	%	102	-	-	105
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			CTP 12/0.0-0.1	CTP 12/0.3-0.5	CTP 12/0.6-0.7	CTP 13/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S12-Se19524	S12-Se19525	S12-Se19526	S12-Se19528
Date Sampled			Sep 21, 2012	Sep 21, 2012	Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit				
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	-	-	< 0.5
Total PCB	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibutylchlorendate (surr.)	1	%	79	-	-	82
Polyaromatic Hydrocarbons (PAH)						
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	-	-	< 1	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	1.0	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	2.0	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH	1	mg/kg	-	-	3.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	93	-
p-Terphenyl-d14 (surr.)	1	%	-	-	86	-
Semivolatile Organic Compounds (SVOC)						
2-Chloronaphthalene	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Methylnaphthalene	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Methylphenol (o-Cresol)	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Naphthylamine	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Nitroaniline	1	mg/kg	< 1	-	-	< 1
2-Nitrophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	< 1	-	-	< 1
3-Methylcholanthrene	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Aminobiphenyl	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Chloro-3-methylphenol	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Chlorophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	< 0.5
4.4'-DDD	0.5	mg/kg	< 0.5	-	-	< 0.5
4.4'-DDE	0.5	mg/kg	< 0.5	-	-	< 0.5
4.4'-DDT	1	mg/kg	< 1	-	-	< 1
Acenaphthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Acetophenone	0.5	mg/kg	< 0.5	-	-	< 0.5
Aldrin	0.5	mg/kg	< 0.5	-	-	< 0.5
Aniline	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(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			**CTP 12/0.0-0.1**	**CTP 12/0.3-0.5**	**CTP 12/0.6-0.7**	**CTP 13/0.0-0.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se19524**	**S12-Se19525**	**S12-Se19526**	**S12-Se19528**
Date Sampled			**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**
Test/Reference	LOR	Unit				
Bis(2-chloroethoxy)methane	0.5	mg/kg	< 0.5	-	-	< 0.5
Bis(2-ethylhexyl)phthalate	5	mg/kg	< 5	-	-	< 5
Butyl benzyl phthalate	0.5	mg/kg	< 0.5	-	-	< 0.5
Chlorpyrifos	0.5	mg/kg	< 0.5	-	-	< 0.5
Chrysene	0.5	mg/kg	< 0.5	-	-	< 0.5
Coumaphos	0.5	mg/kg	< 0.5	-	-	< 0.5
d-BHC	0.5	mg/kg	< 0.5	-	-	< 0.5
Demeton-O	0.5	mg/kg	< 0.5	-	-	< 0.5
Demeton-S	0.5	mg/kg	< 0.5	-	-	< 0.5
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	-	-	< 0.5
Di-n-octyl phthalate	0.5	mg/kg	< 0.5	-	-	< 0.5
Diazinon	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibenzofuran	0.5	mg/kg	< 0.5	-	-	< 0.5
Dichlorvos	0.5	mg/kg	< 0.5	-	-	< 0.5
Dieldrin	0.5	mg/kg	< 0.5	-	-	< 0.5
Diethyl phthalate	0.5	mg/kg	< 0.5	-	-	< 0.5
Dimethoate	0.5	mg/kg	< 0.5	-	-	< 0.5
Dimethyl phthalate	0.5	mg/kg	< 0.5	-	-	< 0.5
Diphenylamine	0.5	mg/kg	< 0.5	-	-	< 0.5
Disulfoton	0.5	mg/kg	< 0.5	-	-	< 0.5
Endosulfan sulphate	0.5	mg/kg	< 0.5	-	-	< 0.5
Endrin	0.5	mg/kg	< 0.5	-	-	< 0.5
Endrin aldehyde	0.5	mg/kg	< 0.5	-	-	< 0.5
Endrin ketone	0.5	mg/kg	< 0.5	-	-	< 0.5
Ethoprop	0.5	mg/kg	< 0.5	-	-	< 0.5
Fenitrothion	0.5	mg/kg	< 0.5	-	-	< 0.5
Fensulfothion	0.5	mg/kg	< 0.5	-	-	< 0.5
Fenthion	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
g-BHC (Lindane)	0.5	mg/kg	< 0.5	-	-	< 0.5
Heptachlor	0.5	mg/kg	< 0.5	-	-	< 0.5
Heptachlor epoxide	0.5	mg/kg	< 0.5	-	-	< 0.5
Hexachlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	< 0.5
Hexachlorocyclopentadiene	2	mg/kg	< 2	-	-	< 2
Hexachloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Malathion	0.5	mg/kg	< 0.5	-	-	< 0.5
Methoxychlor	0.5	mg/kg	< 0.5	-	-	< 0.5
Methyl azinphos	0.5	mg/kg	< 0.5	-	-	< 0.5
Methyl parathion	0.5	mg/kg	< 0.5	-	-	< 0.5
Mevinphos	0.5	mg/kg	< 0.5	-	-	< 0.5
Monocrotophos	10	mg/kg	< 10	-	-	< 10
N-Nitrosodibutylamine	0.5	mg/kg	< 0.5	-	-	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	< 0.5	-	-	< 0.5
N-Nitrosopiperidine	0.5	mg/kg	< 0.5	-	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	-	-	< 0.5
Nitrobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			**CTP 12/0.0-0.1**	**CTP 12/0.3-0.5**	**CTP 12/0.6-0.7**	**CTP 13/0.0-0.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se19524**	**S12-Se19525**	**S12-Se19526**	**S12-Se19528**
Date Sampled			**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**	**Sep 21, 2012**
Test/Reference	LOR	Unit				
Parathion	0.5	mg/kg	< 0.5	-	-	< 0.5
Pentachlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Pentachlorophenol	1	mg/kg	< 1	-	-	< 1
Phenanthrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenol	0.5	mg/kg	< 0.5	-	-	< 0.5
Phorate	0.5	mg/kg	< 0.5	-	-	< 0.5
Profenofos	0.5	mg/kg	< 0.5	-	-	< 0.5
Prothiofos	0.5	mg/kg	< 0.5	-	-	< 0.5
Pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Ronnel	0.5	mg/kg	< 0.5	-	-	< 0.5
Stirophos	0.5	mg/kg	< 0.5	-	-	< 0.5
Trichloronate	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenol-d6 (surr.)	1	%	84	-	-	83
Nitrobenzene-d5 (surr.)	1	%	76	-	-	82
p-Terphenyl-d14 (surr.)	1	%	98	-	-	94
2-Fluorobiphenyl (surr.)	1	%	83	-	-	89
Heavy Metals						
Arsenic	1	mg/kg	3.8	< 1	-	1.3
Cadmium	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Chromium	2	mg/kg	4.4	13	-	4.7
Copper	2	mg/kg	< 2	27	-	< 2
Lead	2	mg/kg	< 2	14	-	2.8
Mercury	0.05	mg/kg	< 0.05	< 0.05	-	< 0.05
Nickel	1	mg/kg	1.1	5.7	-	2.2
Zinc	5	mg/kg	< 5	88	-	< 5
% Moisture	0.1	%	4.2	8.9	12	8.5
Asbestos			-	ASET Report	-	-

Client Sample ID			CTP 13/1.0-1.3	QC12
Sample Matrix			Soil	Soil
mgt-LabMark Sample No.			S12-Se19529	S12-Se19532
Date Sampled			Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	10	mg/kg	< 10	-
TRH C10-C14	50	mg/kg	< 50	-
TRH C15-C28	100	mg/kg	< 100	-
TRH C29-C36	100	mg/kg	< 100	-
TRH C10-36 (Total)	100	mg/kg	< 100	-
Acrylates				
Methyl acrylate	20	mg/kg	-	< 20
Alcohols				
Ethanol	10	mg/kg	-	< 10
Isobutanol	10	mg/kg	-	< 10
Isopropanol	100	mg/kg	-	< 100
Methanol	10	mg/kg	-	< 10
n-Butanol*	10	mg/kg	-	< 10
n-Propanol	10	mg/kg	-	< 10
BTEX				
Benzene	0.5	mg/kg	< 0.5	-
Toluene	0.5	mg/kg	< 0.5	-
Ethylbenzene	0.5	mg/kg	< 0.5	-
Total m+p-Xylenes	1	mg/kg	< 1	-
o-Xylene	0.5	mg/kg	< 0.5	-
Xylenes(ortho.meta and para)	1.5	mg/kg	< 1.5	-
Total BTEX	1.5	mg/kg	< 1.5	-
4-Bromofluorobenzene (surr.)	1	%	100	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-
Volatile Organic Compounds (VOC)				
1.1-Dichloroethane	0.5	mg/kg	-	< 0.5
1.1-Dichloroethene	0.5	mg/kg	-	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	-	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	-	< 0.5
1.2-Dibromo-3-chloropropane	0.5	mg/kg	-	< 0.5
1.2-Dibromoethane	0.5	mg/kg	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	-	< 0.5
1.2-Dichloroethane	0.5	mg/kg	-	< 0.5
1.2-Dichloropropane	0.5	mg/kg	-	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	-	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	-	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	-	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	-	< 0.5
1.3-Dichloropropane	0.5	mg/kg	-	< 0.5

Client Sample ID			CTP 13/1.0-1.3	QC12
Sample Matrix			Soil	Soil
mgt-LabMark Sample No.			S12-Se19529	S12-Se19532
Date Sampled			Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit		
1.3.5-Trimethylbenzene	0.5	mg/kg	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	-	< 0.5
2-Butanone (MEK)	5	mg/kg	-	< 5
2-Chlorotoluene	0.5	mg/kg	-	< 0.5
2-Hexanone (MBK)	5	mg/kg	-	< 5
2-Pentanone	5	mg/kg	-	< 5
4-Chlorotoluene	0.5	mg/kg	-	< 0.5
4-Methyl-2-pentanone (MIBK)	5	mg/kg	-	< 5
Benzene	0.5	mg/kg	-	< 0.5
Bromobenzene	0.5	mg/kg	-	< 0.5
Bromodichloromethane	0.5	mg/kg	-	< 0.5
Bromoform	0.5	mg/kg	-	< 0.5
Bromomethane	5	mg/kg	-	< 5
Carbon disulfide	0.5	mg/kg	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	-	< 0.5
Chlorobenzene	0.5	mg/kg	-	< 0.5
Chloroethane	5	mg/kg	-	< 5
Chloroform	0.5	mg/kg	-	< 0.5
Chloromethane	5	mg/kg	-	< 5
cis-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5
Dibromochloromethane	0.5	mg/kg	-	< 0.5
Dichlorodifluoromethane	5	mg/kg	-	< 5
Ethylbenzene	0.5	mg/kg	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	-	< 0.5
Methylene Chloride	5	mg/kg	-	< 5
n-Butylbenzene	0.5	mg/kg	-	< 0.5
n-Propylbenzene	0.5	mg/kg	-	< 0.5
o-Xylene	0.5	mg/kg	-	< 0.5
p-Isopropyltoluene	0.5	mg/kg	-	< 0.5
sec-Butylbenzene	0.5	mg/kg	-	< 0.5
Styrene	0.5	mg/kg	-	< 0.5
tert-Butylbenzene	0.5	mg/kg	-	< 0.5
Tetrachloroethene	0.5	mg/kg	-	< 0.5
Toluene	0.5	mg/kg	-	< 0.5
Total m+p-Xylenes	1	mg/kg	-	< 1
trans-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5
Trichloroethene	0.5	mg/kg	-	< 0.5
Trichlorofluoromethane	5	mg/kg	-	< 5
Vinyl acetate	5	mg/kg	-	< 5
Vinyl chloride	2	mg/kg	-	< 2
Toluene-d8 (surr.)	1	%	-	106
4-Bromofluorobenzene (surr.)	1	%	-	109
1.2-Dichloroethane-d4 (surr.)	1	%	-	101
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

Client Sample ID			CTP 13/1.0-1.3	QC12
Sample Matrix			Soil	Soil
mgt-LabMark Sample No.			S12-Se19529	S12-Se19532
Date Sampled			Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit		
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	%	-	86
Polyaromatic Hydrocarbons (PAH)				
Acenaphthene	0.5	mg/kg	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-
Benzo(b)fluoranthene & Benzo(k)fluoranthene	1	mg/kg	< 1	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-
Total PAH	1	mg/kg	< 1	-
2-Fluorobiphenyl (surr.)	1	%	102	-
p-Terphenyl-d14 (surr.)	1	%	81	-
Semivolatile Organic Compounds (SVOC)				
2-Chloronaphthalene	0.5	mg/kg	-	< 0.5
2-Chlorophenol	0.5	mg/kg	-	< 0.5
2-Methylnaphthalene	0.5	mg/kg	-	< 0.5
2-Methylphenol (o-Cresol)	0.5	mg/kg	-	< 0.5
2-Naphthylamine	0.5	mg/kg	-	< 0.5
2-Nitroaniline	1	mg/kg	-	< 1
2-Nitrophenol	0.5	mg/kg	-	< 0.5
3&4-Methylphenol (m&p-Cresol)	1	mg/kg	-	< 1
3-Methylcholanthrene	0.5	mg/kg	-	< 0.5
4-Aminobiphenyl	0.5	mg/kg	-	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	-	< 0.5
4-Chloro-3-methylphenol	0.5	mg/kg	-	< 0.5
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	< 0.5
4.4'-DDD	0.5	mg/kg	-	< 0.5
4.4'-DDE	0.5	mg/kg	-	< 0.5
4.4'-DDT	1	mg/kg	-	< 1
Acenaphthene	0.5	mg/kg	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5
Acetophenone	0.5	mg/kg	-	< 0.5
Aldrin	0.5	mg/kg	-	< 0.5
Aniline	0.5	mg/kg	-	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5

Client Sample ID			**CTP 13/1.0-1.3**	**QC12**
Sample Matrix			**Soil**	**Soil**
mgt-LabMark Sample No.			**S12-Se19529**	**S12-Se19532**
Date Sampled			**Sep 21, 2012**	**Sep 21, 2012**
Test/Reference	LOR	Unit		
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	< 0.5
Bis(2-ethylhexyl)phthalate	5	mg/kg	-	< 5
Butyl benzyl phthalate	0.5	mg/kg	-	< 0.5
Chlorpyrifos	0.5	mg/kg	-	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5
Coumaphos	0.5	mg/kg	-	< 0.5
d-BHC	0.5	mg/kg	-	< 0.5
Demeton-O	0.5	mg/kg	-	< 0.5
Demeton-S	0.5	mg/kg	-	< 0.5
Di-n-butyl phthalate	0.5	mg/kg	-	< 0.5
Di-n-octyl phthalate	0.5	mg/kg	-	< 0.5
Diazinon	0.5	mg/kg	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5
Dibenzofuran	0.5	mg/kg	-	< 0.5
Dichlorvos	0.5	mg/kg	-	< 0.5
Dieldrin	0.5	mg/kg	-	< 0.5
Diethyl phthalate	0.5	mg/kg	-	< 0.5
Dimethoate	0.5	mg/kg	-	< 0.5
Dimethyl phthalate	0.5	mg/kg	-	< 0.5
Diphenylamine	0.5	mg/kg	-	< 0.5
Disulfoton	0.5	mg/kg	-	< 0.5
Endosulfan sulphate	0.5	mg/kg	-	< 0.5
Endrin	0.5	mg/kg	-	< 0.5
Endrin aldehyde	0.5	mg/kg	-	< 0.5
Endrin ketone	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
Fluoranthene	0.5	mg/kg	-	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5
g-BHC (Lindane)	0.5	mg/kg	-	< 0.5
Heptachlor	0.5	mg/kg	-	< 0.5
Heptachlor epoxide	0.5	mg/kg	-	< 0.5
Hexachlorobenzene	0.5	mg/kg	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	< 0.5
Hexachlorocyclopentadiene	2	mg/kg	-	< 2
Hexachloroethane	0.5	mg/kg	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5
Malathion	0.5	mg/kg	-	< 0.5
Methoxychlor	0.5	mg/kg	-	< 0.5
Methyl azinphos	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
N-Nitrosodibutylamine	0.5	mg/kg	-	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	-	< 0.5
N-Nitrosopiperidine	0.5	mg/kg	-	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5
Nitrobenzene	0.5	mg/kg	-	< 0.5

Client Sample ID			CTP 13/1.0-1.3	QC12
Sample Matrix			Soil	Soil
mgt-LabMark Sample No.			S12-Se19529	S12-Se19532
Date Sampled			Sep 21, 2012	Sep 21, 2012
Test/Reference	LOR	Unit		
Parathion	0.5	mg/kg	-	< 0.5
Pentachlorobenzene	0.5	mg/kg	-	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	-	< 0.5
Pentachlorophenol	1	mg/kg	-	< 1
Phenanthrene	0.5	mg/kg	-	< 0.5
Phenol	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
Pyrene	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
Phenol-d6 (surr.)	1	%	-	85
Nitrobenzene-d5 (surr.)	1	%	-	77
p-Terphenyl-d14 (surr.)	1	%	-	92
2-Fluorobiphenyl (surr.)	1	%	-	82
Heavy Metals				
Arsenic	1	mg/kg	4.4	-
Cadmium	0.1	mg/kg	< 0.1	-
Chromium	2	mg/kg	27	-
Copper	2	mg/kg	25	-
Lead	2	mg/kg	7.3	-
Mercury	0.05	mg/kg	< 0.05	-
Nickel	1	mg/kg	3.9	-
Zinc	5	mg/kg	37	-
% Moisture	0.1	%	7.0	4.9

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: E004 Petroleum Hydrocarbons (TPH)	Sydney	Sep 26, 2012	14 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Sydney	Sep 25, 2012	14 Day
Acrylates - Method: GC-FID MGT METHOD 470A & US EPA SW846 METHOD 8000	Melbourne	Sep 27, 2012	5 Day
Alcohols - Method: USEPA 8000 Alcohols	Melbourne	Sep 27, 2012	14 Day
BTEX - Method: E029/E016 BTEX	Sydney	Sep 25, 2012	14 Day
Volatile Organic Compounds (VOC) - Method: E016 Volatile Organic Compounds (VOC)	Sydney	Sep 25, 2012	14 Day
Polychlorinated Biphenyls (PCB) - Method: E013 Polychlorinated Biphenyls (PCB)	Sydney	Sep 25, 2012	14 Day
Polyaromatic Hydrocarbons (PAH) - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Sep 26, 2012	14 Day
Semivolatile Organic Compounds (SVOC) - Method: E017 Semivolatile Organic Compounds (SVOC)	Sydney	Sep 25, 2012	14 Day
Metals M8 - Method: E022 Acid Extractable metals in Soils & E026 Mercury	Sydney	Sep 25, 2012	28 Day
% Moisture - Method: E005 Moisture Content	Sydney	Sep 25, 2012	28 Day
Asbestos	Sydney	Sep 25, 2012	

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

web : www.mgtlabmark.com.au
e.mail : enviro@mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:** Sep 24, 2012 12:15 PM
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352956 02 4201 1400 02 4201 1401	**Due:** Oct 2, 2012 **Priority:** 5 Day **Contact Name:** James Boyle
Client Job No.:	ENAUWOLL04107AA			**mgt-LabMark Client Manager: Jean Heng**

Sample Detail	% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC) *First Reported:Oct 03, 2012*
Laboratory where analysis is conducted												
Melbourne Laboratory - NATA Site # 1254 & 14271				X	X							
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												
TP 10/0.0-15	Sep 21, 2012		Soil	S12-Se19516	X					X	X		X	X		
TP 10/1.0-1.2	Sep 21, 2012		Soil	S12-Se19517			X									
TP 10/1.2-1.4	Sep 21, 2012		Soil	S12-Se19518			X									
TP 10/2.2-2.4	Sep 21, 2012		Soil	S12-Se19519	X					X	X		X	X		
TP 11/0.0-0.1	Sep 21, 2012		Soil	S12-Se19520	X			X	X	X		X		X	X	X
TP 11/0.6-0.8	Sep 21, 2012		Soil	S12-Se19521	X	X				X	X	X	X	X		
TP 11/1.7-2.0	Sep 21, 2012		Soil	S12-Se19522			X									
TP 11/2.8-3.0	Sep 21, 2012		Soil	S12-Se19523			X									

First Reported:Oct 03, 2012
Date Reported:Oct 03, 2012

Date Reported:Oct 03, 2012
First Reported:Oct 03, 2012

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

ABN 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

Company Name: Coffey Environments Pty Ltd Wollongong
Address: 118 Auburn Street
Wollongong
NSW 2500

Client Job No.: ENAUWOLL04107AA

Order No.:
Report #: 352956
Phone: 02 4201 1400
Fax: 02 4201 1401

Received: Sep 24, 2012 12:15 PM
Due: Oct 2, 2012
Priority: 5 Day
Contact Name: James Boyle

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted																
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X							
Sydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																
External Laboratory						X										
TP 12/0.0-0.1	Sep 21, 2012		Soil	S12-Se19524	X			X	X	X		X		X	X	X
TP 12/0.3-0.5	Sep 21, 2012		Soil	S12-Se19525	X	X				X	X			X		
TP 12/0.6-0.7	Sep 21, 2012		Soil	S12-Se19526	X								X			
TP 12/1.7-2.0	Sep 21, 2012		Soil	S12-Se19527			X									
TP 13/0.0-0.1	Sep 21, 2012		Soil	S12-Se19528	X			X	X	X		X		X	X	X
TP 13/1.0-1.3	Sep 21, 2012		Soil	S12-Se19529	X					X	X		X	X		
TP 13/1.4-1.6	Sep 21, 2012		Soil	S12-Se19530			X									
TP 13/2.4-2.6	Sep 21, 2012		Soil	S12-Se19531			X									
C12	Sep 21, 2012		Soil	S12-Se19532	X			X	X			X			X	X
C13	Sep 21, 2012		Soil	S12-Se19533			X									
C14	Sep 21, 2012		Soil	S12-Se19534			X									

First Reported:Oct 03, 2012
Date Reported:Oct 03, 2012

First Reported:Oct 03, 2012
Date Reported:Oct 03, 2012

ENVIRONMENTAL LABORATORIES

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 an RPD

UNITS

mg/kg:milligrams per Kilogram
mg/L:milligrams per litre
µg/L:micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%:Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 milliltres

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 client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
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 was performed on samples not pertaining to this report, however 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 below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

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	< 10			10	Pass	
TRH C10-C14	mg/kg	< 50			50	Pass	
TRH C15-C28	mg/kg	< 100			100	Pass	
TRH C29-C36	mg/kg	< 100			100	Pass	
Method Blank							
Acrylates GC-FID MGT METHOD 470A & US EPA SW846 METHOD 8000							
Methyl acrylate	mg/kg	< 20			20	Pass	
Method Blank							
Alcohols USEPA 8000 Alcohols							
Ethanol	mg/kg	< 10			10	Pass	
Isobutanol	mg/kg	< 10			10	Pass	
Isopropanol	mg/kg	< 100			100	Pass	
Methanol	mg/kg	< 10			10	Pass	
n-Butanol*	mg/kg	< 10			10	Pass	
n-Propanol	mg/kg	< 10			10	Pass	
Method Blank							
BTEX E029/E016 BTEX							
Xylenes(ortho.meta and para)	mg/kg	< 1.5			1.5	Pass	
Total BTEX	mg/kg	< 1.5			1.5	Pass	
Method Blank							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
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							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromo-3-chloropropane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 5			5	Pass	
2-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Hexanone (MBK)	mg/kg	< 5			5	Pass	
2-Pentanone	mg/kg	< 5			5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 5			5	Pass	
Benzene	mg/kg	< 0.5			0.5	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 5			5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 5			5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 5			5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 5			5	Pass	
Ethylbenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
Methylene Chloride	mg/kg	< 5			5	Pass	
n-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
n-Propylbenzene	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.5			0.5	Pass	
p-Isopropyltoluene	mg/kg	< 0.5			0.5	Pass	
sec-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
tert-Butylbenzene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.5			0.5	Pass	
Total m+p-Xylenes	mg/kg	< 1			1	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 5			5	Pass	
Vinyl acetate	mg/kg	< 5			5	Pass	
Vinyl chloride	mg/kg	< 2			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							
Polyaromatic Hydrocarbons (PAH) 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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	mg/kg	< 1			1	Pass	
Benzo(g.h.i)perylene	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							
Semivolatile Organic Compounds (SVOC) E017 Semivolatile Organic Compounds (SVOC)							
2-Chloronaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2-Methylnaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.5			0.5	Pass	
2-Naphthylamine	mg/kg	< 0.5			0.5	Pass	
2-Nitroaniline	mg/kg	< 1			1	Pass	
2-Nitrophenol	mg/kg	< 0.5			0.5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 1			1	Pass	
3-Methylcholanthrene	mg/kg	< 0.5			0.5	Pass	
4-Aminobiphenyl	mg/kg	< 0.5			0.5	Pass	
4-Bromophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 0.5			0.5	Pass	
4-Chlorophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4.4'-DDD	mg/kg	< 0.5			0.5	Pass	
4.4'-DDE	mg/kg	< 0.5			0.5	Pass	
4.4'-DDT	mg/kg	< 1			1	Pass	
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Acetophenone	mg/kg	< 0.5			0.5	Pass	
Aldrin	mg/kg	< 0.5			0.5	Pass	
Aniline	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(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Bis(2-chloroethoxy)methane	mg/kg	< 0.5			0.5	Pass	
Bis(2-ethylhexyl)phthalate	mg/kg	< 5			5	Pass	
Butyl benzyl phthalate	mg/kg	< 0.5			0.5	Pass	
Chlorpyrifos	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Coumaphos	mg/kg	< 0.5			0.5	Pass	
d-BHC	mg/kg	< 0.5			0.5	Pass	
Demeton-O	mg/kg	< 0.5			0.5	Pass	
Demeton-S	mg/kg	< 0.5			0.5	Pass	
Di-n-butyl phthalate	mg/kg	< 0.5			0.5	Pass	
Di-n-octyl phthalate	mg/kg	< 0.5			0.5	Pass	
Diazinon	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Dibenzofuran	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dichlorvos	mg/kg	< 0.5			0.5	Pass	
Dieldrin	mg/kg	< 0.5			0.5	Pass	
Diethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethoate	mg/kg	< 0.5			0.5	Pass	
Dimethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Diphenylamine	mg/kg	< 0.5			0.5	Pass	
Disulfoton	mg/kg	< 0.5			0.5	Pass	
Endosulfan sulphate	mg/kg	< 0.5			0.5	Pass	
Endrin	mg/kg	< 0.5			0.5	Pass	
Endrin aldehyde	mg/kg	< 0.5			0.5	Pass	
Endrin ketone	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	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
g-BHC (Lindane)	mg/kg	< 0.5			0.5	Pass	
Heptachlor	mg/kg	< 0.5			0.5	Pass	
Heptachlor epoxide	mg/kg	< 0.5			0.5	Pass	
Hexachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Hexachlorocyclopentadiene	mg/kg	< 2			2	Pass	
Hexachloroethane	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Malathion	mg/kg	< 0.5			0.5	Pass	
Methoxychlor	mg/kg	< 0.5			0.5	Pass	
Methyl azinphos	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	
N-Nitrosodibutylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosodipropylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosopiperidine	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Nitrobenzene	mg/kg	< 0.5			0.5	Pass	
Parathion	mg/kg	< 0.5			0.5	Pass	
Pentachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachloronitrobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Phenol	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	
Pyrene	mg/kg	< 0.5			0.5	Pass	
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							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
Arsenic	mg/kg	< 1			1	Pass	
Cadmium	mg/kg	< 0.1			0.1	Pass	
Chromium	mg/kg	< 2			2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	mg/kg	< 2			2	Pass	
Lead	mg/kg	< 2			2	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 1			1	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	%	86			70-130	Pass	
LCS - % Recovery							
BTEX E029/E016 BTEX							
Xylenes(ortho.meta and para)	%	104			70-130	Pass	
LCS - % Recovery							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
Naphthalene	%	91			70-130	Pass	
TRH C6-C10	%	87			70-130	Pass	
TRH >C10-C16	%	80			70-130	Pass	
LCS - % Recovery							
Volatile Organic Compounds (VOC) E016 Volatile Organic Compounds (VOC)							
1.1-Dichloroethane	%	92			75-125	Pass	
1.1-Dichloroethene	%	91			70-130	Pass	
1.1.1-Trichloroethane	%	100			70-130	Pass	
1.1.1.2-Tetrachloroethane	%	97			70-130	Pass	
1.1.2-Trichloroethane	%	103			70-130	Pass	
1.2-Dibromo-3-chloropropane	%	93			70-130	Pass	
1.2-Dibromoethane	%	105			70-130	Pass	
1.2-Dichlorobenzene	%	96			70-130	Pass	
1.2-Dichloroethane	%	109			70-130	Pass	
1.2-Dichloropropane	%	99			70-130	Pass	
1.2.3-Trichloropropane	%	93			70-130	Pass	
1.2.4-Trichlorobenzene	%	98			70-130	Pass	
1.2.4-Trimethylbenzene	%	95			70-130	Pass	
1.3-Dichlorobenzene	%	93			70-130	Pass	
1.3-Dichloropropane	%	103			70-130	Pass	
1.3.5-Trimethylbenzene	%	94			70-130	Pass	
1.4-Dichlorobenzene	%	94			70-130	Pass	
2-Butanone (MEK)	%	93			70-130	Pass	
2-Chlorotoluene	%	93			70-130	Pass	
2-Hexanone (MBK)	%	105			70-130	Pass	
2-Pentanone	%	103			70-130	Pass	
4-Chlorotoluene	%	93			70-130	Pass	
4-Methyl-2-pentanone (MIBK)	%	104			70-130	Pass	
Benzene	%	107			70-130	Pass	
Bromobenzene	%	93			70-130	Pass	
Bromodichloromethane	%	108			70-130	Pass	
Bromoform	%	107			70-130	Pass	
Bromomethane	%	96			70-130	Pass	
Carbon disulfide	%	95			70-130	Pass	
Carbon Tetrachloride	%	117			70-130	Pass	
Chlorobenzene	%	90			70-130	Pass	
Chloroethane	%	93			70-130	Pass	
Chloroform	%	94			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chloromethane	%	90			70-130	Pass	
cis-1.2-Dichloroethene	%	94			70-130	Pass	
cis-1.3-Dichloropropene	%	113			70-130	Pass	
Dibromochloromethane	%	108			70-130	Pass	
Dichlorodifluoromethane	%	101			70-130	Pass	
Ethylbenzene	%	104			70-130	Pass	
Hexachlorobutadiene	%	94			70-130	Pass	
Isopropyl benzene (Cumene)	%	95			70-130	Pass	
Methylene Chloride	%	95			70-130	Pass	
n-Butylbenzene	%	93			70-130	Pass	
n-Propylbenzene	%	93			70-130	Pass	
o-Xylene	%	103			70-130	Pass	
p-Isopropyltoluene	%	93			70-130	Pass	
sec-Butylbenzene	%	93			70-130	Pass	
Styrene	%	95			70-130	Pass	
tert-Butylbenzene	%	94			70-130	Pass	
Tetrachloroethene	%	109			70-130	Pass	
Toluene	%	104			70-130	Pass	
Total m+p-Xylenes	%	104			70-130	Pass	
trans-1.2-Dichloroethene	%	93			70-130	Pass	
trans-1.3-Dichloropropene	%	113			70-130	Pass	
Trichloroethene	%	98			70-130	Pass	
Trichlorofluoromethane	%	88			70-130	Pass	
Vinyl acetate	%	96			70-130	Pass	
Vinyl chloride	%	111			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls (PCB) E013 Polychlorinated Biphenyls (PCB)							
Aroclor-1260	%	85			70-130	Pass	
LCS - % Recovery							
Polyaromatic Hydrocarbons (PAH) E007 Polyaromatic Hydrocarbons (PAH)							
Acenaphthene	%	100			70-130	Pass	
Acenaphthylene	%	96			70-130	Pass	
Anthracene	%	101			70-130	Pass	
Benz(a)anthracene	%	99			70-130	Pass	
Benzo(a)pyrene	%	90			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	%	93			70-130	Pass	
Benzo(g.h.i)perylene	%	87			70-130	Pass	
Chrysene	%	99			70-130	Pass	
Dibenz(a.h)anthracene	%	85			70-130	Pass	
Fluoranthene	%	96			70-130	Pass	
Fluorene	%	94			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	86			70-130	Pass	
Naphthalene	%	99			70-130	Pass	
Phenanthrene	%	95			70-130	Pass	
Pyrene	%	101			70-130	Pass	
LCS - % Recovery							
Semivolatile Organic Compounds (SVOC) E017 Semivolatile Organic Compounds (SVOC)							
2-Chlorophenol	%	98			70-130	Pass	
4-Chloro-3-methylphenol	%	77			70-130	Pass	
Acenaphthene	%	99			70-130	Pass	
Bis(2-ethylhexyl)phthalate	%	116			70-130	Pass	
Butyl benzyl phthalate	%	110			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chlorpyrifos	%	102			70-130	Pass	
Coumaphos	%	112			70-130	Pass	
Demeton-O	%	110			70-130	Pass	
Demeton-S	%	102			70-130	Pass	
Di-n-butyl phthalate	%	106			70-130	Pass	
Di-n-octyl phthalate	%	121			70-130	Pass	
Diazinon	%	103			70-130	Pass	
Dichlorvos	%	113			70-130	Pass	
Diethyl phthalate	%	100			70-130	Pass	
Dimethoate	%	108			70-130	Pass	
Dimethyl phthalate	%	98			70-130	Pass	
Disulfoton	%	101			70-130	Pass	
Ethoprop	%	107			70-130	Pass	
Fenitrothion	%	100			70-130	Pass	
Fensulfothion	%	114			70-130	Pass	
Fenthion	%	101			70-130	Pass	
Malathion	%	106			70-130	Pass	
Methyl azinphos	%	111			70-130	Pass	
Methyl parathion	%	112			70-130	Pass	
Mevinphos	%	112			70-130	Pass	
Monocrotophos	%	116			70-130	Pass	
N-Nitrosodipropylamine	%	84			70-130	Pass	
Parathion	%	100			70-130	Pass	
Pentachlorophenol	%	76			70-130	Pass	
Phenol	%	81			70-130	Pass	
Phorate	%	106			70-130	Pass	
Profenofos	%	114			70-130	Pass	
Prothiofos	%	102			70-130	Pass	
Pyrene	%	100			70-130	Pass	
Ronnel	%	102			70-130	Pass	
Stirophos	%	112			70-130	Pass	
Trichloronate	%	103			70-130	Pass	
LCS - % Recovery							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
Arsenic	%	76			70-130	Pass	
Cadmium	%	82			70-130	Pass	
Chromium	%	84			70-130	Pass	
Copper	%	84			70-130	Pass	
Lead	%	85			70-130	Pass	
Mercury	%	114			70-130	Pass	
Nickel	%	86			70-130	Pass	
Zinc	%	76			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	S12-Se19516	CP	%	93			70-130	Pass	
TRH C10-C14	S12-Se19516	CP	%	86			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S12-Se19516	CP	%	118			70-130	Pass	
Toluene	S12-Se19516	CP	%	114			70-130	Pass	
Ethylbenzene	S12-Se19516	CP	%	113			70-130	Pass	
Total m+p-Xylenes	S12-Se19516	CP	%	112			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
o-Xylene	S12-Se19516	CP	%	111			70-130	Pass	
Xylenes(ortho.meta and para)	S12-Se19516	CP	%	112			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1					
Naphthalene	S12-Se19516	CP	%	90			70-130	Pass	
TRH C6-C10	S12-Se19516	CP	%	92			70-130	Pass	
TRH >C10-C16	S12-Se19516	CP	%	79			70-130	Pass	
Spike - % Recovery									
Polyaromatic Hydrocarbons (PAH)				Result 1					
Acenaphthene	S12-Se19516	CP	%	96			70-130	Pass	
Acenaphthylene	S12-Se19516	CP	%	94			70-130	Pass	
Anthracene	S12-Se19516	CP	%	93			70-130	Pass	
Benz(a)anthracene	S12-Se19516	CP	%	90			70-130	Pass	
Benzo(a)pyrene	S12-Se19516	CP	%	88			70-130	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se19516	CP	%	91			70-130	Pass	
Benzo(g.h.i)perylene	S12-Se19516	CP	%	88			70-130	Pass	
Chrysene	S12-Se19516	CP	%	94			70-130	Pass	
Dibenz(a.h)anthracene	S12-Se19516	CP	%	86			70-130	Pass	
Fluoranthene	S12-Se19516	CP	%	94			70-130	Pass	
Fluorene	S12-Se19516	CP	%	95			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S12-Se19516	CP	%	87			70-130	Pass	
Naphthalene	S12-Se19516	CP	%	100			70-130	Pass	
Phenanthrene	S12-Se19516	CP	%	94			70-130	Pass	
Pyrene	S12-Se19516	CP	%	95			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Chromium	S12-Se19265	NCP	%	78			70-130	Pass	
Lead	S12-Se19265	NCP	%	105			70-130	Pass	
Mercury	S12-Se18198	NCP	%	97			70-130	Pass	
Zinc	S12-Se16642	NCP	%	104			70-130	Pass	
Spike - % Recovery									
Volatile Organic Compounds (VOC)				Result 1					
1.1-Dichloroethane	S12-Se18361	NCP	%	103			75-125	Pass	
1.1-Dichloroethene	S12-Se18361	NCP	%	109			70-130	Pass	
1.1.1-Trichloroethane	S12-Se18361	NCP	%	110			70-130	Pass	
1.1.1.2-Tetrachloroethane	S12-Se18361	NCP	%	109			70-130	Pass	
1.1.2-Trichloroethane	S12-Se18361	NCP	%	120			70-130	Pass	
1.2-Dibromo-3-chloropropane	S12-Se18361	NCP	%	116			70-130	Pass	
1.2-Dibromoethane	S12-Se18361	NCP	%	116			70-130	Pass	
1.2-Dichlorobenzene	S12-Se18361	NCP	%	109			70-130	Pass	
1.2-Dichloroethane	S12-Se18361	NCP	%	103			70-130	Pass	
1.2-Dichloropropane	S12-Se18361	NCP	%	116			70-130	Pass	
1.2.3-Trichloropropane	S12-Se18361	NCP	%	103			70-130	Pass	
1.2.4-Trichlorobenzene	S12-Se18361	NCP	%	100			70-130	Pass	
1.2.4-Trimethylbenzene	S12-Se18361	NCP	%	107			70-130	Pass	
1.3-Dichlorobenzene	S12-Se18361	NCP	%	105			70-130	Pass	
1.3-Dichloropropane	S12-Se18361	NCP	%	112			70-130	Pass	
1.3.5-Trimethylbenzene	S12-Se18361	NCP	%	107			70-130	Pass	
1.4-Dichlorobenzene	S12-Se18361	NCP	%	105			70-130	Pass	
2-Butanone (MEK)	S12-Se18361	NCP	%	106			70-130	Pass	
2-Chlorotoluene	S12-Se18361	NCP	%	106			70-130	Pass	
2-Hexanone (MBK)	S12-Se18361	NCP	%	112			70-130	Pass	
2-Pentanone	S12-Se18361	NCP	%	105			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
4-Chlorotoluene	S12-Se18361	NCP	%	105			70-130	Pass	
4-Methyl-2-pentanone (MIBK)	S12-Se18361	NCP	%	123			70-130	Pass	
Bromobenzene	S12-Se18361	NCP	%	106			70-130	Pass	
Bromodichloromethane	S12-Se18361	NCP	%	126			70-130	Pass	
Bromoform	S12-Se18361	NCP	%	114			70-130	Pass	
Bromomethane	S12-Se18361	NCP	%	111			70-130	Pass	
Carbon disulfide	S12-Se18361	NCP	%	112			70-130	Pass	
Carbon Tetrachloride	S12-Se18361	NCP	%	129			70-130	Pass	
Chlorobenzene	S12-Se18361	NCP	%	100			70-130	Pass	
Chloroethane	S12-Se18361	NCP	%	111			70-130	Pass	
Chloroform	S12-Se18361	NCP	%	106			70-130	Pass	
Chloromethane	S12-Se18361	NCP	%	112			70-130	Pass	
cis-1.2-Dichloroethene	S12-Se18361	NCP	%	107			70-130	Pass	
cis-1.3-Dichloropropene	S12-Se18361	NCP	%	130			70-130	Pass	
Dibromochloromethane	S12-Se18361	NCP	%	120			70-130	Pass	
Dichlorodifluoromethane	S12-Se18361	NCP	%	110			70-130	Pass	
Isopropyl benzene (Cumene)	S12-Se18361	NCP	%	110			70-130	Pass	
Methylene Chloride	S12-Se18361	NCP	%	110			70-130	Pass	
n-Butylbenzene	S12-Se18361	NCP	%	104			70-130	Pass	
n-Propylbenzene	S12-Se18361	NCP	%	107			70-130	Pass	
p-Isopropyltoluene	S12-Se18361	NCP	%	105			70-130	Pass	
sec-Butylbenzene	S12-Se18361	NCP	%	105			70-130	Pass	
Styrene	S12-Se18361	NCP	%	104			70-130	Pass	
tert-Butylbenzene	S12-Se18361	NCP	%	107			70-130	Pass	
Tetrachloroethene	S12-Se18361	NCP	%	122			70-130	Pass	
trans-1.2-Dichloroethene	S12-Se18361	NCP	%	107			70-130	Pass	
trans-1.3-Dichloropropene	S12-Se18361	NCP	%	130			70-130	Pass	
Trichloroethene	S12-Se18361	NCP	%	117			70-130	Pass	
Trichlorofluoromethane	S12-Se18361	NCP	%	105			70-130	Pass	
Vinyl acetate	S12-Se18361	NCP	%	103			70-130	Pass	
Vinyl chloride	S12-Se18361	NCP	%	128			70-130	Pass	
Spike - % Recovery									
Semivolatile Organic Compounds (SVOC)				Result 1					
Bis(2-ethylhexyl)phthalate	S12-Se20345	NCP	%	127			70-130	Pass	
Butyl benzyl phthalate	S12-Se20345	NCP	%	104			70-130	Pass	
Chlorpyrifos	S12-Se17314	NCP	%	106			70-130	Pass	
Coumaphos	S12-Se17314	NCP	%	122			70-130	Pass	
Demeton-O	S12-Se17314	NCP	%	93			70-130	Pass	
Demeton-S	S12-Se17314	NCP	%	96			70-130	Pass	
Di-n-butyl phthalate	S12-Se20345	NCP	%	119			70-130	Pass	
Di-n-octyl phthalate	S12-Se20345	NCP	%	122			70-130	Pass	
Diazinon	S12-Se17314	NCP	%	111			70-130	Pass	
Dichlorvos	S12-Se17314	NCP	%	107			70-130	Pass	
Diethyl phthalate	S12-Se20345	NCP	%	105			70-130	Pass	
Dimethoate	S12-Se17314	NCP	%	118			70-130	Pass	
Dimethyl phthalate	S12-Se20345	NCP	%	97			70-130	Pass	
Disulfoton	S12-Se17314	NCP	%	99			70-130	Pass	
Ethoprop	S12-Se17314	NCP	%	113			70-130	Pass	
Fenitrothion	S12-Se17314	NCP	%	109			70-130	Pass	
Fensulfothion	S12-Se17314	NCP	%	126			70-130	Pass	
Fenthion	S12-Se17314	NCP	%	109			70-130	Pass	
Malathion	S12-Se17314	NCP	%	119			70-130	Pass	
Methyl azinphos	S12-Se17314	NCP	%	120			70-130	Pass	
Methyl parathion	S12-Se17314	NCP	%	117			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mevinphos	S12-Se17314	NCP	%	113			70-130	Pass	
Monocrotophos	S12-Se17314	NCP	%	116			70-130	Pass	
Parathion	S12-Se17314	NCP	%	104			70-130	Pass	
Phorate	S12-Se17314	NCP	%	107			70-130	Pass	
Profenofos	S12-Se17314	NCP	%	123			70-130	Pass	
Prothiofos	S12-Se17314	NCP	%	117			70-130	Pass	
Ronnel	S12-Se17314	NCP	%	108			70-130	Pass	
Stirophos	S12-Se17314	NCP	%	118			70-130	Pass	
Trichloronate	S12-Se17314	NCP	%	109			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S12-Se19521	CP	%	127			70-130	Pass	
Cadmium	S12-Se19521	CP	%	113			70-130	Pass	
Chromium	S12-Se19521	CP	%	95			70-130	Pass	
Copper	S12-Se19521	CP	%	105			70-130	Pass	
Lead	S12-Se19521	CP	%	80			70-130	Pass	
Nickel	S12-Se19521	CP	%	91			70-130	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S12-Se19516	CP	mg/kg	< 10	< 10	<1	30%	Pass	
TRH C10-C14	S12-Se19516	CP	mg/kg	< 50	< 50	14	30%	Pass	
TRH C15-C28	S12-Se19516	CP	mg/kg	< 100	< 100	2.0	30%	Pass	
TRH C29-C36	S12-Se19516	CP	mg/kg	< 100	< 100	2.0	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Toluene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total m+p-Xylenes	S12-Se19516	CP	mg/kg	< 1	< 1	<1	30%	Pass	
o-Xylene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Xylenes(ortho.meta and para)	S12-Se19516	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Total BTEX	S12-Se19516	CP	mg/kg	< 1.5	< 1.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
Naphthalene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S12-Se19516	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S12-Se19516	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S12-Se19516	CP	mg/kg	< 50	< 50	9.0	30%	Pass	
TRH >C16-C34	S12-Se19516	CP	mg/kg	< 100	< 100	5.0	30%	Pass	
TRH >C34-C40	S12-Se19516	CP	mg/kg	< 100	< 100	1.0	30%	Pass	
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Acenaphthene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b)fluoranthene & Benzo(k)fluoranthene	S12-Se19516	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Benzo(g.h.i)perylene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Polyaromatic Hydrocarbons (PAH)				Result 1	Result 2	RPD			
Indeno(1.2.3-cd)pyrene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S12-Se19516	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Acrylates				Result 1	Result 2	RPD			
Methyl acrylate	S12-Se16891	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Alcohols				Result 1	Result 2	RPD			
Ethanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Isobutanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Isopropanol	S12-Se18405	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Methanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Butanol*	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
n-Propanol	S12-Se15013	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
1.1-Dichloroethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromo-3-chloropropane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Chlorotoluene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Hexanone (MBK)	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Pentanone	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
4-Chlorotoluene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Bromobenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Carbon disulfide	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Chloroform	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
cis-1.2-Dichloroethene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Volatile Organic Compounds (VOC)				Result 1	Result 2	RPD			
Dibromochloromethane	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Hexachlorobutadiene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
n-Butylbenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
n-Propylbenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
p-Isopropyltoluene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
sec-Butylbenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
tert-Butylbenzene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	S12-Se21290	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Vinyl acetate	S12-Se21290	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Vinyl chloride	S12-Se21290	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
2-Chloronaphthalene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Chlorophenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylnaphthalene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Naphthylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Nitroaniline	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2-Nitrophenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
3-Methylcholanthrene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Aminobiphenyl	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Bromophenyl phenyl ether	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorophenyl phenyl ether	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDD	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDE	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4.4'-DDT	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Acetophenone	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aldrin	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aniline	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-chloroethoxy)methane	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bis(2-ethylhexyl)phthalate	S12-Se15013	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Butyl benzyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorpyrifos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Coumaphos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
d-BHC	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-O	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Demeton-S	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-butyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-octyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diazinon	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenzofuran	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorvos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Semivolatile Organic Compounds (SVOC)				Result 1	Result 2	RPD			
Dieldrin	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diethyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethoate	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethyl phthalate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diphenylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Disulfoton	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endosulfan sulphate	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin aldehyde	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Endrin ketone	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethoprop	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenitrothion	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fensulfothion	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fenthion	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
g-BHC (Lindane)	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Heptachlor	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Heptachlor epoxide	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Malathion	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methoxychlor	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl azinphos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methyl parathion	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Mevinphos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Monocrotophos	S12-Se17314	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
N-Nitrosodibutylamine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
N-Nitrosodipropylamine	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
N-Nitrosopiperidine	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Nitrobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Parathion	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachloronitrobenzene	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S12-Se15013	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Phenol	S12-Se15013	NCP	mg/kg	< 0.5	< 0.5	9.0	30%	Pass	
Phorate	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Profenofos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Prothiofos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ronnel	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Stirophos	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloronate	S12-Se17314	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	S12-Se19520	CP	mg/kg	5.3	< 1	180	30%	Fail	Q15
Cadmium	S12-Se19520	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Chromium	S12-Se19520	CP	mg/kg	6.6	4.4	41	30%	Fail	Q15
Copper	S12-Se19520	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Lead	S12-Se19520	CP	mg/kg	< 2	2.5	120	30%	Fail	Q15
Mercury	S12-Se19520	CP	mg/kg	< 0.05	< 0.05	51	30%	Fail	Q15
Nickel	S12-Se19520	CP	mg/kg	1.1	1.1	1.0	30%	Pass	
Zinc	S12-Se19520	CP	mg/kg	< 5	< 5	<1	30%	Pass	

Comments

Please note: Asbestos analysed by ASET (Job : ASET31083/34263/1-2) NATA Accreditation : 14484

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.
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Jean Heng	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
James Norford	Senior Analyst-Metal (NSW)
Laura Schofield	Senior Analyst-Volatile (NSW)
Ryan Hamilton	Senior Analyst-Organic (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

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET31083/ 34263 / 1 - 2
Your ref: 352956
NATA Accreditation No: 14484

26 September 2012

MGT- Labmark Environmental Pty Ltd
Unit F3, Building F, 16 Mars Road
Lane Cove NSW 2066

Attn: Dr Robert Symons
Laboratory & Technical Manager

Dear Robert

Asbestos Identification
This report presents the results of two samples, forwarded by MGT- Labmark Environmental Pty Ltd on 25 September 2012, for analysis for asbestos.

1.Introduction: Two samples forwarded were examined and analysed for the presence of asbestos.

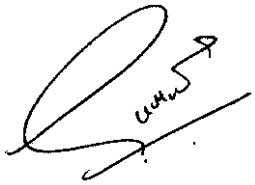
2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Safer Environment Method 1.)**

3. Results : **Sample No. 1. ASET31083 / 34263 / 1. CTP 11/0.6-0.8 - Se19521**
Approx dimensions 6.0 cm x 6.0 cm x 3.5 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of plaster, cement and bitumen.
No asbestos detected.

Sample No. 2. ASET31083 / 34263 / 2. CTP 12/0.3-0.5 - Se19525
Approx dimensions 6.0 cm x 6.0 cm x 4.0 cm
The sample consisted of a mixture of clayish soil, stones, plant matter, fragments of plaster and cement.
No asbestos detected.

Analysed and reported by,

Nisansala Maddage. BSc(Hons)
Environmental Scientist/Approved Identifier



Mahen De Silva . BSc. MSc. Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Signatory

NATA
WORLD RECOGNISED ACCREDITATION

This document is issued in accordance with NATA's Accreditation requirements. Accredited for compliance with ISO/IEC 17025.

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Sep 24, 2012 12:15 PM
Address:	118 Auburn Street	**Report #:**	352956	**Due:**	Oct 3, 2012
	Wollongong	**Phone:**	02 4201 1400	**Priority:**	6 Day
	NSW 2500	**Fax:**	02 4201 1401	**Contact Name:**	James Boyle
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail	% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
Laboratory where analysis is conducted												
Melbourne Laboratory - NATA Site # 1254 & 14271				X	X							
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**												
TP 10/0.0-15 / Sep 21, 2012 / / Soil / S12-Se19516	X					X	X		X	X		
TP 10/1.0-1.2 / Sep 21, 2012 / / Soil / S12-Se19517			X									
TP 10/1.2-1.4 / Sep 21, 2012 / / Soil / S12-Se19518			X									
TP 10/2.2-2.4 / Sep 21, 2012 / / Soil / S12-Se19519	X					X	X		X	X		
TP 11/0.0-0.1 / Sep 21, 2012 / / Soil / S12-Se19520	X			X	X	X		X		X	X	X
TP 11/0.6-0.8 / Sep 21, 2012 / / Soil / S12-Se19521	X	X				X	X	X	X	X		
TP 11/1.7-2.0 / Sep 21, 2012 / / Soil / S12-Se19522			X									
TP 11/2.8-3.0 / Sep 21, 2012 / / Soil / S12-Se19523			X									

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

ABN 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**	
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	352956 02 4201 1400 02 4201 1401
Client Job No.:	ENAUWOLL04107AA		

Received:	Sep 24, 2012 12:15 PM
Due:	Oct 3, 2012
Priority:	6 Day
Contact Name:	James Boyle

mgt-LabMark Client Manager: Jean Heng

Sample Detail					% Moisture	Asbestos	HOLD	Methyl acrylate	Alcohols	Metals M8	BTEX	Polychlorinated Biphenyls (PCB)	Polyaromatic Hydrocarbons (PAH)	Total Recoverable Hydrocarbons	Semivolatile Organic Compounds (SVOC)	Volatile Organic Compounds (VOC)
aboratory where analysis is conducted																
elbourne Laboratory - NATA Site # 1254 & 14271								X	X							
ydney Laboratory - NATA Site # 18217					X		X			X	X	X	X	X	X	X
risbane Laboratory - NATA Site # 20794																
xternal Laboratory						X										
TP 12/0.0-0.1	Sep 21, 2012		Soil	S12-Se19524	X			X	X	X		X		X	X	X
TP 12/0.3-0.5	Sep 21, 2012		Soil	S12-Se19525	X	X				X	X			X		
TP 12/0.6-0.7	Sep 21, 2012		Soil	S12-Se19526	X								X			
TP 12/1.7-2.0	Sep 21, 2012		Soil	S12-Se19527			X									
TP 13/0.0-0.1	Sep 21, 2012		Soil	S12-Se19528	X			X	X	X		X		X	X	X
TP 13/1.0-1.3	Sep 21, 2012		Soil	S12-Se19529	X					X	X		X	X		
TP 13/1.4-1.6	Sep 21, 2012		Soil	S12-Se19530			X									
TP 13/2.4-2.6	Sep 21, 2012		Soil	S12-Se19531			X									
C12	Sep 21, 2012		Soil	S12-Se19532	X			X	X			X			X	X
C13	Sep 21, 2012		Soil	S12-Se19533			X									
C14	Sep 21, 2012		Soil	S12-Se19534			X									

mgt LabMark
ENVIRONMENTAL LABORATORIES

ABN – 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

Sydney
Unit F6, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 8215 6222
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd Wollongong**

Contact name: James Boyle
Client job number: ENAUWOLL04107AA
COC number: 9615-16
Turn around time: 6 Day
Date/Time received: Sep 24, 2012 12:15 PM
mgt-LabMark reference: **352956**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by mgt-LabMark Sample Receipt : 10 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Alcohols & Esters performed by mgt-Labmark Melbourne | Asbestos conducted by ASET|QC11 forwarded to Envirolab as requested

Contact notes

If you have any questions with respect to these samples please contact:

Jean Heng on Phone : (+61) (2) 9900 8400 or by e.mail: jean.heng@mgtlabmark.com.au

Results will be delivered electronically via e.mail to James Boyle - james_boyle@coffey.com.

coffey

Chain of Custody

#352956

No: 9615

Laboratory Quotation / Order No:

Job No: ENAUWOLL04107AA

Sheet 1 of 2

Dispatch to: (Address & Phone No.) MGT Laboratory Unit F3, 16 Mars Road WEST LANE COVE NSW 2066	Sampled by: A. Williams	Consigning Officer: A. Williams / J. Boyle Date Dispatched: 21/9/12
Attention: Sample Receipt	Project Manager: (report results to) J. Boyle	Courier Service: MEB Courier Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Williams	21/9/12	4:00pm	J. Boyle	21/9/12	4:00pm
J. Boyle	21/9/12		Bo	24/9/12	1215pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	~~Metals~~ = BTEX	Metals: *	SVOCs	VOCs	Alcohol soak	PCBs	Asbestos	Methyl acrylate						Sample Condition on Receipt
Sep 16	SOIL	~~GRIC~~ Ice, 250mL jar & zip lock bag	CTP10/0.0-0.15	21/9/12	/	/	/	/												
17			/1.0-1.2																	
18			/1.2-1.4																	
19			/2.2-2.4		/	/	/	/												
20			*CTP11/0.0-0.1			A	/	/	/	/	/	/								
21			/0.6-0.8		/	/	/	/				/	/							
22			/1.7-2.0																	
23			/2.8-3.0																	
24			CTP12/0.0-0.1			/		/	/	/	/	/		/						
25			/0.3-0.5			/	/	/					/							
26			/0.6-0.7		/															
27			/1.7-2.0																	
28			CTP13/0.0-0.1			/		/	/	/	/	/		/						
29			/1.0-1.3		/	/	/	/												
30			/1.4-1.6																	
31			/2.4-2.6																	
		FWD.	**QC11			/		/												

Special Laboratory Instructions: * *- Please send to Envirolab for analysis

* As, Cd, Cr, Cu, Pb, Hg, Zn, Ni

Detection Limits:

Turnaround Required: Standard.

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

842209-06

coffey

Chain of Custody

#352956

No: 9616

Laboratory Quotation / Order No:

Job No: EWAWOLL09107AA

Sheet 2 of 2

Dispatch to: (Address & Phone No.) //	Sampled by: //	Consigning Officer: A. Williams Date Dispatched: 21/9/12
Attention: //	Project Manager: (report results to) //	Courier Service: M & B Courier Consignment Note No: //

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
//	//	//		24/9/12	12:45 pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	~~BTEXs~~ = BTEX	Metals: *	SVOC	VOCs	PCBs	Alcohol	Phenols							Sample Condition on Receipt
32	//	//	QC12	21/9/12					/	/	/	/	/							
33			QC13	↓																
34			QC14																	

Special Laboratory Instructions: * As, Cd, Cr, Cu, Pb, Ni, Hg, Zn

Detection Limits:

Turnaround Required: 1 11

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

6422/09-06

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

mgt LabMark ENVIRONMENTAL LABORATORIES

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.

NATA WORLD RECOGNISED ACCREDITATION

Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500

Attention:Alexander Williams

Report	**354358-S**
Client Reference	ENAUWOLL04107AA
Received Date	Oct 04, 2012

Client Sample ID			**CTP09/0.9-1.0 ACM**
Sample Matrix			**Other**
mgt-LabMark Sample No.			**S12-Oc04239**
Date Sampled			**Sep 19, 2012**
Test/Reference	LOR	Unit	
Asbestos			ASET report

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Asbestos	Sydney	Oct 04, 2012	

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

web : www.mgtlabmark.com.au
e.mail : enviro@mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**	
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:**	354358
		Phone:	02 4201 1400
		Fax:	02 4201 1401
Client Job No.:	ENAUWOLL04107AA		

Received:	Oct 4, 2012 4:35 PM
Due:	Oct 12, 2012
Priority:	5 Day
Contact Name:	Alexander Williams

mgt-LabMark Client Manager: Jean Heng

Sample Detail					Asbestos
Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					
External Laboratory					X
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
TP09/0.9-1.0 CM	Sep 19, 2012		Other	S12-Oc04239	X

First Reported:Oct 08, 2012
Date Reported:Oct 08, 2012

First Reported:Oct 08, 2012
Date Reported:Oct 08, 2012

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 an RPD

UNITS

mg/kg:milligrams per Kilogram
mg/L:milligrams per litre
µg/L:micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%:Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 milliltres

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 client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
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 was performed on samples not pertaining to this report, however 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 below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Comments

Please note: Asbestos analysed by ASET (Job : ASET31161/34341/1-1) NATA Accreditation : 14484

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	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	Yes

Authorised By

Jean Heng Client Services

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

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET31161/ 34341 / 1 - 1
Your ref : 354358
NATA Accreditation No: 14484

5 October 2012

MGT- Labmark Environmental Pty Ltd
Unit F3, Building F, 16 Mars Road
Lane Cove NSW 2066

Attn: Dr Robert Symons
Laboratory & Technical Manager

Dear Robert

Asbestos Identification
This report presents the results of one sample, forwarded by MGT- Labmark Environmental Pty Ltd on 5 October 2012, for analysis for asbestos.

1.Introduction: One sample forwarded was examined and analysed for the presence of asbestos.

2. Methods : The sample was examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Safer Environment Method 1.)**

3. Results : **Sample No. 1. ASET31161 / 34341 / 1. 354358- CTP09 - 0.9 - 1.0 - ACM - Oc04239.**
Approx dimensions 4.0 cm x 3.5 cm x 2.25 cm
The sample consisted of a mixture of sandy soil and a fragment of plastic like material.
No asbestos detected.

Analysed and reported by,

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier.
Approved Signatory

NATA
WORLD RECOGNISED
ACCREDITATION

This document is issued in accordance with NATA's Accreditation requirements. Accredited for compliance with ISO/IEC 17025.

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

web : www.mgtlabmark.com.au
e.mail : enviro@mgtlabmark.com.au
ABN 50 005 085 521

ENVIRONMENTAL LABORATORIES

Company Name:	Coffey Environments Pty Ltd Wollongong	**Order No.:**		**Received:**	Oct 4, 2012 4:35 PM
Address:	118 Auburn Street Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	354358 02 4201 1400 02 4201 1401	**Due:** **Priority:** **Contact Name:**	Oct 12, 2012 5 Day Alexander Williams
Client Job No.:	ENAUWOLL04107AA				

mgt-LabMark Client Manager: Jean Heng

Sample Detail					Asbestos
Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					
External Laboratory					X
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
TP09/0.9-1.0 CM	Sep 19, 2012		Other	S12-Oc04239	X

mgt LabMark
ENVIRONMENTAL LABORATORIES

ABN – 50 005 085 521 e.mail : enviro@mgtlabmark.com.au web : www.mgtlabmark.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 9564 7055
NATA # 1261
Site # 1254

Sydney
Unit F6, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 8215 6222
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd Wollongong**

Contact name: Alexander Williams
Client job number: ENAUWOLL04107AA
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Oct 4, 2012 4:35 PM
mgt-LabMark reference: **354358**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by mgt-LabMark Sample Receipt : 16 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Asbestos conducted by ASET | Analysis missed from report 352721
Samples received by the laboratory after 4pm are deemed to have been received the following working day.

Contact notes

If you have any questions with respect to these samples please contact:

Jean Heng on Phone : (+61) (2) 9900 8400 or by e.mail: jean.heng@mgtlabmark.com.au

Results will be delivered electronically via e.mail to Alexander Williams - Alexander_Williams@coffey.com.

From: Alexander Williams [mailto:Alexander_Williams@coffey.com]
Sent: Thursday, October 04, 2012 4:36 PM
To: Jean Heng
Subject: Request asbestos analysis

Hello Jean,

Could you please arrange the analysis for asbestos in sample CTP09/0.9-1.0 ACM. It appears to have been mistakenly excluded from the analysis summary, as it was selected on the original COC in batch 352721.

As for Phenols, it appears that the existing reported results for Phenol are suitable for our purposes.

Kind Regards,

ALEXANDER WILLIAMS
Graduate Environmental Engineer

354358

Coffey Environments
118 Auburn Street Wollongong NSW 2500 Australia
T +61 2 4201 1433 F +61 2 4201 1401 M +61 407 243 663
coffey.com

coffey

Chain of Custody

No: 9614

Laboratory Quotation / Order No:

Job No: ENAUWOLL09107AA Sheet 2 of 2

Dispatch to: (Address & Phone No.) "	Sampled by: "	Consigning Officer: A. Williams Date Dispatched: 20/9/12
Attention: "	Project Manager: (report results to) "	Courier Service: A&B Couriers Consignment Note No: # 352721

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
"	"	"		200912	17.30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX = STEX	Metals	Organics	Sample Condition on Receipt
E16901	"	"	CTP09/1.3-1.5	19/9/12						
902			/2.0-2.2							
903			/2.7-2.9							
904			QC9							
905	Material	Ziplock only	CTP09/0.9-1.0 Asn						/	

Special Laboratory Instructions: "

Detection Limits:

Turnaround Required: "

354358

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

642205-06

Copies: WHITE: Sign on release. YELLOW: If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 79365

Client:
Coffey Environment (Wollongong)
118 Auburn St
Wollongong
NSW 2500

Attention: J Boyle

Sample log in details:

Your Reference:	**ENAUWOLLO4107AA**		
No. of samples:	1 Soil		
Date samples received / completed instructions received	25/09/2012	/	25/09/2012

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	3/10/12	/	3/10/12
Date of Preliminary Report:	Not issued		

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

Results Approved By:

Nancy Zhang
Chemist

Rhian Morgan
Reporting Supervisor

Alex MacLean
Chemist

ACCREDITED FOR TECHNICAL COMPETENCE

TRH in Soil (C6-C9)		
Our Reference:	UNITS	79365-1
Your Reference	----------	QC11
Date Sampled	----------	21/09/2012
Type of sample		Soil
Date extracted	-	26/09/2012
Date analysed	-	27/09/2012
vTRH C_6 - C_9	mg/kg	<25
Surrogate aaa-Trifluorotoluene	%	108

sTRH in Soil (C10-C36)		
Our Reference:	UNITS	79365-1
Your Reference	----------	QC11
Date Sampled	----------	21/09/2012
Type of sample		Soil
Date extracted	-	26/9/12
Date analysed	-	26/9/12
TRHC$_{10}$ - C$_{14}$	mg/kg	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100
Surrogate o-Terphenyl	%	93

Acid Extractable metals in soil		
Our Reference:	UNITS	79365-1
Your Reference	----------	QC11
Date Sampled	----------	21/09/2012
Type of sample		Soil
Date digested	-	26/09/2012
Date analysed	-	26/09/2012
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.5
Chromium	mg/kg	2
Copper	mg/kg	1
Lead	mg/kg	<1
Mercury	mg/kg	<0.1
Nickel	mg/kg	<1
Zinc	mg/kg	4

Moisture		
Our Reference:	UNITS	79365-1
Your Reference	----------	QC11
Date Sampled	----------	21/09/2012
Type of sample		Soil
Date prepared	-	26/09/12
Date analysed	-	27/09/12
Moisture	%	12

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.

QUALITY CONTROL TRH in Soil (C6-C9)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			26/09/2012	[NT]	[NT]	LCS-2	26/09/2012
Date analysed	-			27/09/2012	[NT]	[NT]	LCS-2	27/09/2012
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-2	120%
Surrogate aaa-Trifluorotoluene	%		Org-016	110	[NT]	[NT]	LCS-2	108%
QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			26/9/12	[NT]	[NT]	LCS-2	26/9/12
Date analysed	-			26/9/12	[NT]	[NT]	LCS-2	26/9/12
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	91%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	99%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	89%
Surrogate o-Terphenyl	%		Org-003	93	[NT]	[NT]	LCS-2	95%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			26/09/2012	[NT]	[NT]	LCS-1	26/09/2012
Date analysed	-			26/09/2012	[NT]	[NT]	LCS-1	26/09/2012
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	93%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	[NT]	[NT]	LCS-1	98%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	99%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	99%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	93%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	100%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	95%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	97%

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

Report Comments:

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

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

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Coffey Environment (Wollongong)
118 Auburn St
Wollongong NSW 2500

ph: 02 4016 2300
Fax: 02 4201 1401

Attention: J Boyle

Sample log in details:

Your reference:	**ENAUWOLLO4107AA**
Envirolab Reference:	**79365**
Date received:	25/09/2012
Date results expected to be reported:	**3/10/12**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Soil
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

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

Contact details:

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

coffey

Chain of Custody

No: 9615

Laboratory Quotation / Order No:

Job No: ENAWOLLO4107AA Sheet 1 of 2

Dispatch to: (Address & Phone No.) MGT Laboratory Unit F3, 16 Mars Road WEST LANE COVE NSW 2066

Sampled by: A. Williams

Consigning Officer: A Williams / J. Boyle

Date Dispatched: 21/9/12

Attention: Sample Receipt

Project Manager: (report results to) J. Boyle

Courier Service: MRB Courier

Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
A. Williams	21/9/12	4:00pm	J. Boyle	21/9/12	4:00p.m
J. Boyle	21/9/12		Bo Jian	25/9/12	13.30.
CHRISTINE	25/9/12	2:50PM	Jian	24/9/12	12:15pm

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX = BTEX	Metals: *	SVOCs	VOCs	Alcohol soft	PCBs	Asbestos	Methyl acrylate					Sample Condition on Receipt
	SOIL	~~GRIOT~~ Ice; 250mL jar & zip lock bag	CTP10/0.0-0.15	21/9/12	✓	✓	✓	✓											
			/1.0-1.2																
			/1.2-1.4																
			/2.2-2.4		✓	✓	✓	✓											
			CTP11/0.0-0.1			✓		✓	✓	✓	✓	✓		✓					
			/0.6-0.8		✓	✓	✓	✓				✓	✓						
			/1.7-2.0																
			/2.8-3.0																
			CTP12/0.0-0.1			✓		✓	✓	✓	✓	✓		✓					
			/0.3-0.5			✓	✓	✓					✓						
			/0.6-0.7		✓														
			/1.7-2.0																
			CTP13/0.0-0.1			✓		✓	✓	✓	✓	✓		✓					
			/1.0-1.3		✓	✓	½	✓											
			/1.4-1.6																
			/2.4-2.6																
		FWD 1 *	* QC11			✓		✓											

Special Laboratory Instructions: * - Please send to Envirolab for analysis

* As, Cd, Cr, Cu, Pb, Hg, Zn, Ni

Detection Limits:

Turnaround Required: Standard.

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

ENVIROLAB

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

Job No: 78365

Date Received: 25.9.12.
Time Received: 13.30
Received by: Jian Liu
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.

8422079-96

Appendix F
Data Validation Reports

Preliminary Baseline Contamination Assessment, Proposed Biodiesel Facility
Inner Harbour, Port Kembla

Coffey Environments Australia Pty Ltd

A.C.N. 140 765 902 A.B.N. 65 140 765 902

QA/QC DATA VALIDATION REPORT

Job No: ENAUWOLL04107AA MGT Batches: 352482, 352720, 352721, 352956. Envirolab batch: 79365

I. SAMPLE HANDLING

	Yes	No (Comment below)
1. Were the sample **holding times** met?	☐	☒
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

The Certificates of Analysis for Batches 352482, 352720, 352721 and 352956 indicated that samples were extracted for analysis of methyl acrylates outside the recommended holding time by between 1 to 3 days. It is noted that the reported concentrations may be marginally less than what is actually present.

Given that the samples were appropriately preserved during transit, should elevated concentrations of acrylate be currently present within the soil at locations tested, this would be likely to be reflected to some degree in the laboratory results. As it is, all samples recorded acrylate concentrations less than the laboratory limit of reporting. This is further supported by field observations – methyl acrylate commonly gives off a distinctive acrid, bitter odour (US EPA 1987), which was not detected during fieldwork.

Methyl acrylates, other than being used in transesterification processes, are also associated with use in leatherworks, textile and paper manufacturing, and was also historically used to produce acrylic fibres and plastic bottles (US EPA, 1987). Based on our knowledge of the site history, it is unlikely that any of these processes occurred on-site. Based on the above lines of evidence, it is considered unlikely that there is methyl acrylates currently present at elevated concentrations on the site

Sample Handling was: ☒ Satisfactory ☐ Unsatisfactory ☐ Partially Satisfactory

II PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☐	☒
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

- The analyses of methyl acrylate and alcohols in soils were based on USEPA SW846 Method 8000 and USEPA 8000 Alcohols respectively.

Precision/Accuracy of the Laboratory Report	☒ Satisfactory	☐ Unsatisfactory
	☐ Partially Satisfactory	

III. FIELD QA/QC

1. Number of Primary Samples Analysed — Soil: 24; Water: N/A

2. Number of Days of Sampling: — Soil: 4 days; Water: N/A

3. Number and Type of QA/QC Samples Collected:

	SOIL	WATER
Field Duplicates (at least 1 in 10 samples)	2 intra lab + 1 inter lab	NA
Trip Spikes	1	
Trip Blanks (at least 1/day or sampling event)	1	NA
Wash Blanks (at least 1/day/matrix/equipment)	N/A	NA
Other (Field Blanks, etc.)	N/A	NA

4. FIELD DUPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of field duplicates analysed for each chemical (min. 10%)?	☐	☒
B. Were RPDs within Control Limits?		
a. Organics (< 50 % for soil; < 30% for water)	☒	☐
b. Metals/Inorganics (< 50 % for soil; < 30% for water)	☒	☐

COMMENTS:

- RPDs calculated for this project have been presented at the end of this report in Table QAQC1.
- An insufficient number of duplicates (between 9.0 to 9.5%) were analysed for heavy metals, TPH, BTEX and PAH. This is not considered significant as this is only marginally less than the recommended frequency of 10%. Furthermore, the sampling procedures used were based on Coffey standard operating procedures, based on industry standards, there this is not considered to affect the usability of the data.
- Several inconsistencies were recorded between CTP10/0.0-0.15m and corresponding inter-laboratory duplicate pair (QC11) for some heavy metals. The contaminant was either not detected in primary sample but was detected in duplicate sample, or vice versa. This result is not considered significant as concentrations were close to the LOR.

5. TRIP BLANKS

	Yes	No (Comment below)
A. Were an adequate number of trip blanks collected?	☒	☐
B. Were the trip blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	☒	☐

6. TRIP SPIKES

	Yes	No (Comment below)
A. Were an adequate number of trip spikes collected?	☒	☐
B. Were the spike recoveries within control limits (60% to 110%)?	☒	☐

7. WASH BLANKS

	Yes	No (Comment below)
A. Were an adequate number of Wash Blanks collected?	N/A	
B. Were the Wash Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	N/A	

COMMENTS:

- A laboratory prepared trip spike sample (spiked with BTEX) was taken into the field and transported with the laboratory samples. Recoveries for benzene, toluene, ethylbenzene and xylene ranged between 72% and 88% which are within the control limits.
- Soil samples were either collected directly from the excavator bucket, excavation walls or ground surface using a clean pair of disposable gloves for each sample and therefore a wash blank sample was not necessary.

Field QA/QC was:	☒ Satisfactory	☐ Unsatisfactory
	☐ Partially Satisfactory	

IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type of QA/QC Samples

	TPH (C_6-C_9), BTEX	TPH (C_{10}-C_{36})	PAH	OCP / OPP	PCB	VOC	SVOC	Alcohols	Acrylates	Metals	Asbestos
Laboratory Blanks/Reagent Blanks (at least 1 per batch)	✓	✓*	✓*	✓	✓*	✓*	✓*	✓	✓	✓*	N/A
Laboratory Duplicates (at least 1 per batch or 1 per 10 samples whichever is the smaller)	✓	✓	✓	✓	-	✓*	✓	✓	✓	✓	N/A
Matrix Spikes/Matrix Spike Duplicates (1 for each soil type)	✓	✓	✓	✓	-	✓*	✓*	NA	NA	✓*	N/A
Laboratory Control Spike	✓	✓*	✓*	✓*	✓*	✓*	✓*	NA	NA	✓*	N/A
Surrogate (where appropriate)#	1	-	2	-	-	3	4	-	-	-	N/A

* Not analysed for Batch 352721.

#Number of surrogates spikes carried out on each sample

	Yes	No (Comment below)
2 Were the laboratory blanks/reagents blanks free of contamination?	☒	☐
3. Were the spike recoveries within laboratory control limits?*		
a. Organics	☒	☐
b. Metals/Inorganic	☒	☐
4. Were the RPDs of the laboratory duplicates within control limits?#	☐	☒
5. Were the surrogate recoveries within control limits?	☒	☐

MGT Laboratory control limits:

* - Organics: MS (70 to 130%); LCS (70 to 130%); SS (50 to 150%); SS Phenols only (20 to 130%)
- Inorganic: MS (70 to 130%); LCS (70 to 130%)

\# - Result < 10 times LOR then No Limit
- Result between 10-20 times LOR then control limit of 50%
- Result > 20 times LOR then control limit of 30%

COMMENTS:

- An email from MGT laboratory (Jean Heng dated 10 October 2012) indicated that MGT laboratory does not routinely performing laboratory control spikes (LCS) or matrix spikes for alcohols and acrylates.
- In batch 352721 an insufficient number of QC tests were performed for $TPHC_{10}$-C_{36}, PAH, PCB, heavy metals, VOC, SVOC, and acrylates. The laboratory indicated that this was due to each batch size containing a relatively small number of samples for PCBs. Laboratory QC tests were undertaken for PAH, $TPHC_{10}$-C_{36}, heavy metals, VOC and SVOC in remaining batches, and no significant inconsistencies were reported. Insufficient QC testing was undertaken on acrylates and PCBs. This is not considered significant as concentrations of these contaminants were less than the

laboratory limit of reporting.

- In the batch QA/QC for all MGT Batches, laboratory duplicates recorded RPDs ranging between 32% to 180% for arsenic, copper, chromium, lead and mercury which are outside the control limit of 30%. The laboratory indicated that these RPDs passed the MGT acceptance criteria as the reported concentrations were close to the LOR (i.e. within 10 times LOR). This is not considered significant in the context of this report.

5. The laboratory internal QA/QC was:	☒ Satisfactory ☐ Partially Satisfactory	☐ Unsatisfactory

Table QAQC1: Relative Percentage Difference for Soil Samples

Batch			352720			352956 / 79365			352956		
			Primary Sample Conc. (mg/kg)	Intra-laboratory Duplicate Sample Conc. (mg/Kg)	RPD (%)	Primary Sample Conc. (mg/kg)	Inter-laboratory Duplicate Sample Conc. (mg/Kg)	RPD (%)	Primary Sample Conc. (mg/kg)	Duplicate Sample Conc. (mg/Kg)	RPD (%)
Sample No.			CTP06	QC1		CTP10	QC1 1		CTP06	QC1 2	
Depth (m)			0.0-0.2	0.0-0.2		0.0-0.15	0.0-0.15		0.0-0.2	0.0-0.2	
Analyte	**LOR (MGT)**	**LOR (Envirolab)**									
HEAVY METALS											
Arsenic	1	4	4.8	6.4	28.57	1.7	<4	NC	5.3	-	-
Cadmium	0.1	0.5	0.3	0.4	28.57	< 0.1	<0.5	NC	< 0.1	-	-
Chromium	2	1	580	750	25.56	4.7	2	80.60	6.6	-	-
Copper	2	1	3.4	2.3	38.60	< 2	1	NC	< 2	-	-
Lead	2	1	5	5.8	14.81	2.6	<1	NC	< 2	-	-
Mercury	0.05	0.1	< 0.05	< 0.05	NA	< 0.05	<0.1	NA	< 0.05	-	-
Nickel	1	1	14	14	0.00	2.9	<1	NC	1.1	-	-
Zinc	5	1	52	62	17.54	< 5	4	NC	< 5	-	-
TOTAL PETROLEUM HYDROCARBONS											
C6 - C9 Fraction	10	25	< 10	< 10	NA	< 10	<25	NA	< 10	-	-
C10 - C14 Fraction	50	50	64	85	28.19	< 50	<50	NA	< 50	-	-
C15 - C28 Fraction	100	100	< 100	< 100	NA	< 100	<100	NA	< 100	-	-
C29 - C36 Fraction	100	100	< 100	< 100	NA	< 100	<100	NA	< 100	-	-
Total C10-C36	100	LOR	< 100	< 100	NA	< 100	<LOR	NA	< 100	-	-
BTEX											
Benzene	0.5	-	< 0.5	< 0.5	NA	< 0.5	-	-	< 0.5	< 0.5	NA
Toluene	0.5	-	< 0.5	< 0.5	NA	< 0.5	-	-	< 0.5	< 0.5	NA
Ethylbenzene	0.5	-	< 0.5	< 0.5	NA	< 0.5	-	-	< 0.5	< 0.5	NA
Total Xylene	1.5	-	< 1.5	< 1.5	NA	< 1.5	-	-	< 1.5	< 1.5	NA
POLYCYCLIC AROMATIC HYDROCARBONS											
Benzo(a)pyrene	0.5	-	< 0.5	< 0.5	NA	< 0.5	-	-	< 0.5	< 0.5	NA
Total PAH	1	-	< 1	< 1	NA	< 1	-	-	< 1	< 1	NA
VOLATILE ORGANIC COMPOUNDS	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
SEMI VOLATILE ORGANIC COMPOUNDS	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
ORGANOCHLORINE PESTICIDES											
Heptachlor	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	NA
Aldrin + Dieldrin	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
DDT + DDE + DDD	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
Other OCP	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
ORGANOPHOSPHOROUS PESTICIDES											
Total OPP	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
POLYCHLORINATED BIPHENYLS											
Total PCB	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
ASBESTOS	-	-	-	-	-	-	-	-	-	-	-
PHENOL	< 0.5	-	-	-	-	-	-	-	<LOR	<LOR	NA
ALCOHOLS											
Methanol	<10	-	-	-	-	-	-	-	<10	<10	NA
Ethanol	<10	-	-	-	-	-	-	-	<10	<10	NA
Other Alcohols	<LOR	-	-	-	-	-	-	-	<LOR	<LOR	NA
METHYL ACRYLATE	<20	-	-	-	-	-	-	-	< 20	< 20	NA

Notes:

Bold RPD exceeds control limit if:
- Result < 10 times LOR, then no limit.
- Result between 10 and 20 times LOR, then 50%
- Result > 20 times LOR, then 30%.

ND Not Detected

\- Not Tested

LOR Limits of Reporting

NA Not Applicable

TABLE QAQC2:

SUMMARY OF QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

BTEX and TPH

(All results in mg/kg)

Sample ID	Trip Spike	Trip Blank
QAQC Type	Trip Spike	Trip Blank
Media	Soil	Soil
Date of Sampling	17-Sep-12	17-Sep-12
TOTAL PETROLEUM HYDROCARBONS		
C6 - C9 Fraction	-	<10
C10 - C14 Fraction	-	-
C15 - C28 Fraction	-	-
C29 - C36 Fraction	-	-
Total C10-C36	-	-
BTEX		
Benzene	88%	< 0.5
Toluene	72%	< 0.5
Ethylbenzene	84%	< 0.5
Total Xylene	88%	< 1.5

NOTES:

Bold Concentration exceeds control limit.

ND Not Detected

\- Not Tested

LOR Limits of Reporting

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Cardno is an ASX200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

Contact

Cardno South Coast

Level 1, 47 Burelli Street
Wollongong NSW 2500

Phone: 02 4228 4133
Fax: 02 4228 6811

southcoast@cardno.com.au
www.cardno.com

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