

## Final Report

Post Phase 2 Environmental Site Assessment

Mobil Service Station Merimbula (NO1063)

27 Market Street, Merimbula NSW 2548

13 AUGUST 2009

Prepared for  
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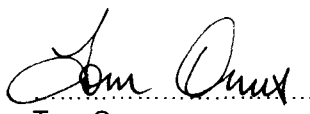
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## Abbreviations

<b>Abbreviation</b>	<b>Description</b>
AHD	Australian Height Datum
AIP	Australian Institute of Petroleum
ALS	Australian Laboratory Services
AMG	Australian Map Grid
ANZECC	Australian and New Zealand Environment and Conservation Council
AOIG	Australian Oil Industry Guidelines
AST	Above-Ground Storage Tank
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, total Xylene
mbTOC	Metres Below Top of Casing
COC	Chain of Custody
COPC	Chemical of Potential Concern
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
EC	Electrical Conductivity
EIL	Ecological Investigation Level
EMP	Environmental Management Plan
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
FB	Field Blank
GME	Groundwater Monitoring Event
GMP	Groundwater Monitoring Plan
GRA	Global Remediation Australia
GAC	Groundwater Acceptance Criteria
Ha	Hectares
HASP	Health and Safety Plan
HIL	Health Investigation Levels
IL	Investigation Levels
LNAPL	Light Non-Aqueous Phase Liquid
LOR	Limit of Reporting
LP	Leaded Petrol
LRP	Lead Replacement Petrol
m	Metres
MAH	Monocyclic Aromatic Hydrocarbons
µg/L	Micrograms per Litre
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NA	Natural Attenuation
N/A	Not Applicable
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticides
OPP	Organophosphorous Pesticides
PAH	Polycyclic Aromatic Hydrocarbons



<b>Abbreviation</b>	<b>Description</b>
PCB	Polychlorinated Biphenyl
P1 ESA	Phase 1 Environmental Site Assessment
P2 ESA	Phase 2 Environmental Site Assessment
PP2 ESA	Post Phase 2 Environmental Site Assessment
PID	Photo-Ionisation Detector
PSH	Phase Separated Hydrocarbon
PULP	Premium Unleaded Petrol
QRA	Quantitative Risk Assessment
RAP	Remediation Action Plan
RB	Rinsate Blank
RPD	Relative Percentage Difference
SAC	Soil Acceptance Criteria
SRMP	Site Risk Management Plan
SVOC	Semi-Volatile Organic Compounds
SWL	Standing Water Level
TB	Trip Blank
TDS	Total Dissolved Solids
TEA	Tank Excavation Assessment
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TIT	Triple Interceptor Trap
ULP	Unleaded Petrol
UST	Underground Storage Tank
URS	URS Australia Pty Ltd
VOC	Volatile Organic Compounds
WRF	Work Request Form

## DEFINITION OF TERMS

Throughout this report, unless the context suggests otherwise;

**"Environmental Laws"** means all current and future laws (including the common law), rules and regulations of the Commonwealth of Australia or any of its States or Territories, or provisions within any such laws, rules or regulations which may apply in the State where the site is located and which prescribe standards, methods, operating procedures or remedies for:

- a) treatment, handling, transportation and disposal of products, waste material or hazardous substances; and
- b) the discharge, emission or seepage of chemicals, manufactured products or other substances into the environment, or which otherwise prescribe standards for protection of the workplace, community, livestock, wildlife or the environment or which prescribe penalties or damages for death to individuals for failure to comply with such standards or for pollution or contamination of the environment.

**"Acceptance Criteria"** means the criteria specified in the Attached Reports which are criteria:

- a) adopted by applicable state or national regulatory authorities and/or prescribed under Environmental Laws as at the date of the Report; and/or
- b) determined by reference to risk assessment principles and processes.

**"Report"** means this Environmental Report and its appendices.

**"Attached Reports"** means those documents which are referred to as appendices A to I.

## Executive Summary

URS Australia Pty Ltd (URS) was commissioned by Mobil Oil Australia Pty Ltd on 30 April 2009 to undertake a Post Phase 2 Environmental Site Assessment (PP2 ESA) of the Mobil Service Station Merimbula (NO1063), located at 27 Market Street, Merimbula, NSW, 2548 (the Site) (Figure 1 and 2).

### Site Identification

FACILITY NAME	Mobil Service Station Merimbula
SITE ID NUMBER	NO1063
FACILITY ADDRESS	27 Market Street, Merimbula, NSW, 2548

### Purpose and Objectives

The purpose of this PP2 ESA was as follows;

- To close data gaps identified in previous P1 and P2 ESA reports conducted by IT Environmental (Australia) Pty Ltd at the Site;
- To investigate the nature and extent of petroleum hydrocarbon impacts within soil and groundwater environments beneath the Site;
- To qualitatively assess the potential risks that the identified COPC may pose to human and environmental receptors within and in close proximity to the Site; and
- To provide risk management options for corrective actions to address any encountered hydrocarbon impact.

### Scope of Work

The scope of work for this investigation included;

- Drilling of three bores and conversion into groundwater monitoring wells;
- Gauging and sampling of four existing and the three newly installed groundwater monitoring wells;
- Analysis of selected soil and groundwater samples for TPH, BTEX, PAHs, phenols and inorganics; and
- Monitoring of 7 utility service pits surrounding the Site.

### Summary of Findings

The Site is a closed service station with all petroleum infrastructure still present. The Site is currently zoned as 3(a) General Business Zone, which allows commercial and residential land use.

The Site is bordered by Market Street to the east, Monaro Street to the south and Wonga Street to the west. Land uses and properties located adjacent to the Site include commercial properties to the north, south, east and west and residential properties to the west.

Groundwater is present in a sand aquifer at approximately 1.5 mbgs. It is of a quality suitable for drinking purposes, however, the township of Merimbula has a reticulated water supply so it is considered unlikely to be used for drinking water. Groundwater flow direction is inferred to be to the south east towards Merimbula Lake at an estimated velocity of between 0.1 to 195 m/yr. Potential surface water receptors include Merimbula Lake. There are no registered groundwater bores within a 500 m radius of the Site.

Hydrocarbon concentrations were not detected above the lower limit of reporting in the 3 soil bores (MW5 to MW7). A hydrocarbon odour and high PID reading were noted in the soil samples collected



## Executive Summary

from MW5 at a depth of 1.8 to 2.0 mbgs. This sample was collected from below the water table and therefore may be representative of groundwater conditions.

All 7 groundwater monitoring wells reported semi-volatile (TPH C<sub>10</sub>-C<sub>36</sub>) hydrocarbon impact above the LOR. It is therefore inferred that dissolved phase petroleum hydrocarbon impact is present beneath the majority of the Site. The groundwater sample from MW7 contained an ethylbenzene concentration exceeding the acceptance criteria. Concentrations of arsenic and zinc exceeded the acceptance criteria in a number of samples, however are likely to represent background concentrations.

### ***Summary of Qualitative Risk Assessment***

A qualitative assessment of risk posed to potential environmental and human receptors from the contamination identified at the Site was conducted. It concluded that soil concentrations for samples collected during this investigation are less than the adopted acceptance criteria and therefore the risks are acceptable and no further quantification is required,

It is noted that there was positive TPH C<sub>10</sub>-C<sub>36</sub> concentrations in all on-site wells, however there is no human health screening guideline established for TPH. Arsenic concentrations exceeded the human health adopted investigation levels for groundwater. The arsenic investigation level is based on drinking water quality and as the Site is located within an area of domestic water supply, it is not considered that groundwater would be extracted for domestic purposes, hence the potential risks to human health are considered to be low and acceptable.

### ***Summary of Risk Management Options***

Risk management options recommended to mitigate the risks posed by the identified impacts include that appropriate OH&S procedures should be implemented to minimise dermal contact with soil and groundwater and to minimise exposure to vapours during any subsurface work. Such procedures should address the monitoring of hydrocarbon concentrations in the air during excavation works, and the appropriate handling, storage and management of contaminated soil and/or groundwater encountered during any Site works.

### ***Conclusions***

The results of this investigation indicate that the groundwater beneath the Site is impacted by petroleum hydrocarbons. Due to the semi-volatile nature of the hydrocarbons present in the groundwater, the likely source is the oil storage and infrastructure related to the workshop area. Given the direction and velocity of groundwater flow, dissolved phase impacts have the potential to reach the surface water receptor located approximately 40 m downgradient, however the low solubility and high retardation factor of the semi-volatile hydrocarbon impact would mitigate this somewhat. The soil and groundwater concentrations do not pose a potential risk to human health or the environment.

Although concentrations of ethylbenzene, arsenic and zinc in groundwater exceeded the acceptance criteria for commercial/industrial use, the lack of a potential risk to human health and the environment means that the Site is suitable for continued use as a service station or redevelopment for commercial or residential use.

The above conclusion shall be read in conjunction with the conclusions as stated in **Section 10**.

## Introduction

### 1.1 General Introduction

URS Australia Pty Ltd (URS) was commissioned by Mobil Oil Australia Pty Ltd on 30 April 2009 to undertake a Post Phase 2 Environmental Site Assessment (PP2 ESA) of the Mobil Service Station Merimbula (NO1063), located at 27 Market Street, Merimbula, NSW, 2548 (the Site) (**Figure 1 and 2**).

The purpose of this PP2 ESA was as follows;

- To close data gaps identified in previous P1 and P2 ESA reports conducted by IT Environmental (Australia) Pty Ltd at the Site;
- To investigate the nature and extent of petroleum hydrocarbon impacts within soil and groundwater environments beneath the Site;
- To qualitatively assess the potential risks that the identified COPC may pose to human and environmental receptors within and in close proximity to the Site; and
- To provide risk management options for corrective actions to address any encountered hydrocarbon impact.

This PP2 ESA was undertaken in general accordance with:

- Applicable Environmental Laws;
- The Work Request Form (ref: NO1063/2) as presented in **Appendix A**; and
- Mobil Oil Australia Pty Ltd's *Environmental Site Assessment Specification, Module 5 – Post Phase 2 ESA Activities*, 5<sup>th</sup> June 2006 (Doc Ref: GRA-S-ESA-Mod05-Rev1).

Relevant project management information is provided in **Appendix A**.

### 1.2 Scope of Work

The scope of work for this investigation included;

- Drilling of three bores and conversion into groundwater monitoring wells;
- Gauging and sampling of four existing and the three newly installed groundwater monitoring wells;
- Analysis of selected soil and groundwater samples for TPH, BTEX, PAHs, phenols and inorganics; and
- Monitoring of 7 utility service pits surrounding the Site.

## Site Historical Review

### 2.1 Introduction

Site details and historical information have been sourced from the IT Environmental (Australia) Pty Ltd reports Phase 1 ESA (2005a) and Phase 2 ESA (2005b), as well as updated information obtained from Site observations during the current PP2 ESA field program.

An interview was also conducted with Mrs Shirley Bazley, Hon Curator at The Old School Museum on 14 May 2009. She indicated that there was no additional site specific information to supplement existing source material, however, a service station was located opposite the Site on the eastern side of Market Street. It was present in a photograph of the area taken in the 1930s and replaced by shops in the 1980s.

### 2.2 Site Definition

#### 2.2.1 General Information

A summary of the Site description is provided in the following table:

Table 2-1 Summary of Site Description Details

Facility Name	Mobil Service Station Merimbula
ExxonMobil Site Number	NO1063
Facility Address	27 Market Street Merimbula NSW 2548
Title Identification Details/ Legal Description	Lot 1 within Deposited Plan 163768 under the Local Government Area of Bega Valley, County of Auckland, Parish of Pambula.
Current Ownership	Mobil Oil Australia Pty Ltd
Current Site Use and Zoning	Site Use: Closed  Zoning: 3(a) General Business Zone, under the Bega Valley Local Environmental Plan 2002. Allowable developments include childcare centres, recreations areas and dwelling houses attached to shops.
Proposed Site Use	Unknown. Possible commercial and/or residential redevelopment.
Previous ESA or Validation Reports	IT Environmental (Australia) Pty Ltd, 2005a, <i>Phase 1 Environmental Site Assessment, Mobil Service Station Merimbula (NO1063), 27 Market Street, Merimbula NSW 2548</i> , reported to Mobil Oil Australia Pty Ltd, Victoria.  IT Environmental (Australia) Pty Ltd, 2005b, <i>Phase 2 Environmental Site Assessment, Mobil Service Station Merimbula (Site ID: NO1063), 27 Market Street, Merimbula NSW 2548</i> , reported to Mobil Oil Australia Pty Ltd, Victoria.
Site Area	Approximately 1,100 m <sup>2</sup>

#### 2.2.2 On-Site Fuel/Chemical Storage Facilities

Information pertaining to above ground and below ground fuel/chemical storage facilities (AST and UST respectively) was obtained from the following sources:

- IT Environmental (2005a and 2005b) Phase 1 and Phase 2 ESA reports; and
- A Site inspection carried out by URS personnel on 13 May 2009.

Current and former on-site fuel storage facilities are detailed in **Table 1a** and **1b**.

## 2 Site Historical Review

### 2.2.3 Summary of Past Environmental Investigations

From the two historical ESA reports reviewed for the Site, the key findings pertaining to the historical uses of the Site are detailed below:

*Phase 1 Environmental Site Assessment, Mobil Service Station Merimbula (NO1063), 27 Market Street, Merimbula NSW 2548*

Date 31 October 2005

Scope: The aim of the Phase 1 ESA was to compile a historical overview of the Site.

Findings: Infrastructure on-site includes five USTs and one LPG AST. According to anecdotal information from the Site operator one UST has previously been removed from the Site. The Site was purchased by the Vacuum Oil Company (now Mobil Oil Australia Pty Ltd) in 1959 for the purposes of petroleum storage and distribution. Prior to 1959 the Site was most likely used for farming and storage purposes (see Table 2).

The potential sources of contamination include leaks and spills from petroleum related infrastructure and distribution systems, the workshop area, car wash bays and imported fill material

The chemicals of concern associated with the potential sources include TPH, BTEX, lead, PAHs and phenols. Pathways and potential receptors were identified.

*Phase 2 Environmental Site Assessment, Mobil Service Station Merimbula (Site ID: NO1063), 27 Market Street, Merimbula NSW 2548*

Date 31 October 2005

Scope: The objectives of the Phase 2 ESA were to:

- define the nature, extent and sources of liquid, dissolved and vapour phase petroleum hydrocarbon impacts identified at the Site;
- determine the influence of specific geologic and hydrogeological conditions on the fate and transport of contaminants identified at the Site;
- identify potential contaminants that may pose a risk to human health and the environment; and
- provide determination as to whether the Site is fit for ongoing use as a service station.

Findings: IT Environmental drilled 11 soil bores (MW1 to MW4, SB5 to SB11) to depths of between 4 and 6 mbgs in September 2005. Groundwater monitoring wells were installed in MW1 to MW4. Soil and groundwater samples were collected for analyses.

The inferred direction of groundwater flow is to the south south-west with a seepage velocity of between 1 and 2 m/day.

Hydrocarbon impacted soil (as TPH C<sub>10</sub>-C<sub>36</sub>) exceeding the nominated ILs were detected in soil boreholes MW4 and SB7 located along the western boundary of the Site at depths of 2 m and 0.5 mbgs, respectively. The sample collected from MW4 at 2 mbgs was from below the groundwater table and therefore possibly representative of groundwater conditions.

PSH was not detected in any monitoring wells.

Low dissolved phase hydrocarbon concentrations (as TPH) were detected in one monitoring well (MW4) located along the western boundary of the Site.

Concentrations of dissolved arsenic, chromium, mercury and zinc were detected at concentrations above the nominated ILs in groundwater beneath the Site. Dissolved metals concentrations are likely to be related to regional background levels.

Adverse health effects as a result of exposure to the impacted soil and/or groundwater was considered as unlikely to occur.

## 2.3 Historical Site Use Summary

A summary of the historical Site use and information obtained for this PP2 ESA is presented in Table 2.



## Site Setting and Sensitive Receptor Survey

### 3.1 Topography

Topographical Site information was obtained from the Land Information Centre (1974) *Pambula 8824-2-S 1:25,000 Topographic Map* and from a Site visit. The Site topography can be described as generally flat with a gentle slop to the east towards Market Street. Regional topography for the 500 m radius surrounding the Site slopes from west/southwest to east towards Merimbula Lake. The elevation ranges from 50 mAHD to the southwest of the Site to 0 mAHD approximately 40 m to the east of the Site.

### 3.2 Site Setting

#### 3.2.1 Regional Setting

Sensitive land uses located within a 500 m radius of the Site have been obtained from UBD New South Wales (2009), Google Streetview (viewed 5/6/09) and from the Site inspection conducted by URS personnel on 13 May 2009. The regional sensitive land uses are illustrated on **Figure 2** and summarised below:

- Retirement village approximately 500 m to the south west of the Site;
- Residential properties approximately 40 m to the west and 200 m to the north east of the Site;
- Commercial properties to the north, east, south and west of the Site;
- Merimbula Lake to the east, south east and south of the Site;
- Tennis courts 500 m to the north west of the Site;
- Old School Museum 300 m north of the Site;
- Berrambool sportsground 500 m to the north of the Site;
- Numerous motels located between 200 and 500 m to the north, north west and west of the Site;
- Two churches located 400 m north and 450 m north east of the Site;
- The council offices and bowling club locates 350 m north of the Site; and
- A hotel/motel located 200 m south of the Site.

It is also noted that two service stations are located on Merimbula Drive approximately 200 m and 350 m to the north west of the Site.

#### 3.2.2 Local Setting

Land uses and properties adjacent to the Site, including those across adjacent roads were obtained during the Site inspection conducted by URS personnel. Identified adjacent landuses are illustrated on **Figure 2** and summarised below:

Table 3-1 Adjacent Property Descriptions

Direction from Site	Site Use (Nature of Activity)	Business Name
North	Commercial	Gloria Jean's Coffees and the Centrepont Shopping Centre
South	Commercial	Sanity, Rivers, McDonalds, Jeans West
East	Commercial	Promenade Shopping Complex, Lakeside Walk Shopping Complex
West	Residential and Commercial	Monarco Court (residential apartments), Merimbula Fresh Fruit Market

### 3 Site Setting and Sensitive Receptor Survey

#### 3.3 Surface Water Receptors

Existing surface water receptors within 500 metres of the Site were obtained from the Land Information Centre (1974) *Pambula 8824-2-S 1:25,000 Topographic Map* and from the Site inspection conducted by URS personnel. Based on the local and regional topography, the migration of surface and subsurface contaminant releases from the Site are likely to be to the east towards Merimbula Lake.

The closest and only surface water receptor within 500 m of Site is Merimbula Lake, approximately 40 m to the east of the Site (**Figure 2**).

#### 3.4 Underground Utility Search

The location of on-site and off-site underground utilities is illustrated on **Figure 3**. Details of the utilities were gathered from site figures in IT Environmental's Phase 1 ESA (2005a) and Phase 2 ESA (2005b) reports, as well as results of the "Dial Before You Dig" search. Where possible, the locations of existing services were verified during the Site inspection conducted by URS personnel.

#### 3.5 Regional Geology

Information on the regional geology of the Site was obtained from the following sources:

- IT Environmental (Australia) Pty Ltd, 2005a, *Phase 1 Environmental Site Assessment, Mobil Service Station Merimbula (NO1063), 27 Market Street, Merimbula NSW 2548*, reported to Mobil Oil Australia Pty Ltd, Victoria.
- IT Environmental (Australia) Pty Ltd, 2005b, *Phase 2 Environmental Site Assessment, Mobil Service Station Merimbula (Site ID: NO1063), 27 Market Street, Merimbula NSW 2548*, reported to Mobil Oil Australia Pty Ltd, Victoria.

The regional geology provided in IT Environmental's Phase 1 ESA (2005a) and Phase 2 ESA (2005b) reports was obtained from the Bega Mallacoota Geological Series Sheet SJ/55-4 and Part Sheet SJ/55-8 (1995). The Site is likely to overlap two different geological regions. The general geological profile in the region is summarised in the following table.

**Table 3-2 Regional Geology**

Geological Unit	Description	Depth Interval (mbgs)	Thickness (m)
<b>Eastern Region</b>			
Ben Bite Formation	Mudrock, coarse sandstone	Unknown	Unknown
Worange Point Formation	Massive sandstone with mudrock	Unknown	Unknown
Bellbird Creek Formation	Thin-bedded sandstone, siltstone and mudstone	Unknown	Unknown
Twofold Bay Formation	Fluvial sandstone with mudrock and conglomerate	Unknown	Unknown
<b>Western Region</b>	Alluvial and colluvial deposits	unknown	Unknown

### 3 Site Setting and Sensitive Receptor Survey

#### 3.6 Regional Hydrogeology

Information and data on the regional hydrogeology relevant to the region were obtained from the following source:

- Department of Water Resources, 1987, *Groundwater in NSW Assessment of Pollution Risk Map, 1:2,000,000*.
- IT Environmental (Australia) Pty Ltd, 2005a, *Phase 1 Environmental Site Assessment, Mobil Service Station Merimbula (NO1063), 27 Market Street, Merimbula NSW 2548*, reported to Mobil Oil Australia Pty Ltd, Victoria.
- IT Environmental (Australia) Pty Ltd, 2005b, *Phase 2 Environmental Site Assessment, Mobil Service Station Merimbula (Site ID: NO1063), 27 Market Street, Merimbula NSW 2548*, reported to Mobil Oil Australia Pty Ltd, Victoria.

The information indicates that the uppermost regional water bearing unit comprises generally low yielding (less than 5 L/second) and low salinity (less than 1000 mg/L) groundwater suitable for stock, domestic and some irrigation purposes. The regional hydrogeology is summarised in **Table 3**.

#### 3.7 Groundwater Bore Records Search

A search for registered groundwater users located within a 500 m radius of the Site was undertaken using the Groundwater Bore Database maintained by the NSW Department of Water and Energy (DWE). The results of the search are summarised in **Table 4** and presented in **Appendix B**.

The results indicate that there are no registered groundwater users within a 500 m radius of the Site. The closest 7 registered groundwater bores are presented on **Figure 2**.

The four groundwater monitoring wells installed by IT Environmental in 2005 were not listed in the Groundwater Bore Database. No other unregistered monitoring wells were identified on or in the immediate vicinity of the Site.

## **4 Preliminary Site Conceptual Model**

- Lateral migration of impacted groundwater towards Merimbula Lake located approximately 40 m to the east of the Site.
- Direct ingestion of soil or groundwater during intrusive works or groundwater abstraction.
- Dermal contact with impacted soil or groundwater.

### **4.1.4 Potential Receptors**

Identified potential receptors of COPCs, should complete exposure pathways be present in the vicinity of the Site, include:

- Visitors to Site.
- Off-site employees at commercial complexes to the north, east, south and west of the Site.
- Off-site residents located to the west of the Site.
- Potential unregistered down-gradient groundwater users for domestic, recreational and industrial purposes.
- Workers undertaking maintenance of existing subsurface utility infrastructure.
- Construction workers undertaking ground disturbance.
- Soil and groundwater environments beneath the Site and their associated ecosystems.
- Merimbula Lake receiving groundwater discharge from the Site.
- Corrosion / permeation of existing utilities including drinking water mains.
- Buildings and structures.



## Environmental Site Assessment Methodology

### 5.1 Soil Investigation

As part of this Post Phase 2 ESA, a soil investigation was performed at the Site. Details of the soil investigation are summarised in the following table. The locations of soil bores are presented on **Figure 3**.

Table 5-1 Soil Investigation Activity Summary

Activity/Item	Details
Date of Field Activities	13 and 14 May 2009
Service Location	DAGS Location Services were engaged to identify underground services prior to any intrusive works commencing.
Drilling	Dig Smart cleared drilling locations using non-destructive digging (air knifing) as per the Mobil Oil Australia Pty. Ltd. – Pre-Drilling Protocol. Concrete coring was required at 3 locations (MW5, MW6 and MW7). Coring was conducted by Condill. Motorised drilling was undertaken using continuous flight hollow stem augers at all soil bore locations (MW5, MW6 and MW7).
Bores Drilled and Target Depth	Total of 3 soil boreholes (MW5, MW6 and MW7) were drilled. <ul style="list-style-type: none"> <li>MW5 was drilled to a depth of 4.1 metres</li> <li>MW6 was drilled to a depth of 4.0 metres</li> <li>MW7 was drilled to a depth of 4.0 metres</li> </ul> The locations of the soil bores are presented on <b>Figure 3</b> .
Soil Logging	Soil and rock type classifications and descriptions are based on USCS and AS4482.1-1997. Soil descriptions for the lithology encountered during drilling are presented in the borelogs in <b>Appendix D</b> .
Sampling Methodology	Soil samples were collected by hand auger for samples collected up to 1.2 mbgs. Soil samples were collected using pushtube from 2.0 mbgs to the termination of drilling. All samples were placed in clean, laboratory-supplied acid washed solvent rinsed glass jars with Teflon lined lids.
Soil Screening	Concentrations of volatile organic compounds from collected soil samples were screened using a photo ionisation detector (PID) that was calibrated daily to a known concentration of iso-butylene calibration gas and adjusted to measure the benzene equivalent concentration.
Sample Preservation	Samples were stored on ice, in an esky whilst on-site and in transit to the laboratory.
Decontamination Procedures	The hand auger and pushtube housing were decontaminated between samples with Decon 90 solution and rinsed with potable water. Drilling equipment coming into contact with soils was decontaminated between soil-bores with a high-pressure water-jet and potable water.
Disposal of Soil Cuttings	Soil cuttings were contained on-site in 1 x 205L drum prior to disposal by Volman Enterprises Pty Ltd in accordance with NSW Regulations. Waste disposal certificates are presented in <b>Appendix E</b> .
Soil Bore Abandonment	All three soil bores were converted into groundwater monitoring wells (refer <b>Section 5.2</b> ).

## 5 Environmental Site Assessment Methodology

### 5.2 Groundwater Investigation

As part of the Post Phase 2 ESA, a groundwater investigation was performed on the Site. Details of the groundwater investigation are summarised in the following table. The locations of monitoring wells are presented on **Figure 3**.

Table 5-2 Groundwater Investigation Activity Summary

Activity/Item	Details
Date of Field Activities	Groundwater monitoring well construction – 14 May 2009 Groundwater sampling - 21 May 2009
Well Construction	Three (3) wells (MW5, MW6 and MW7) were constructed with 50 mm, Class 18 uPVC threaded screen and casing. Construction details for groundwater monitoring wells are presented in <b>Appendix D</b> .
Well Development	Following installation of the monitoring wells, each well was developed by removing approximately 5 bore volumes at which point field parameters had stabilised. Development was conducted using a Waterra footvalve.
Well Survey	A licensed surveyor, Caddey Searl & Jarman, was commissioned to survey the height (elevation) and location of all wells to metres Australian Height Datum (mAHD) and Australian Map Grid (AMG) co-ordinates, respectively. The survey data is presented in <b>Appendix F</b> .
Well Gauging	Monitoring wells were gauged, using an oil / water interface probe, for depth to groundwater, the potential presence of PSH, and total depth of well prior to the commencement of purging.
Well Purging	Each monitoring well was purged dry or an equivalent three (minimum) well volumes removed using dedicated disposable bailers prior to sampling. Ex-situ measurement of groundwater pH, dissolved oxygen (DO), reduction potential (redox), temperature and electrical conductivity (EC) was conducted during purging. Field data sheets showing purging details are presented in <b>Appendix G</b> .
Sampling Methodology	Groundwater samples were collected using the dedicated disposable bailers used for purging the wells. The bailers were equipped with volatile organic compound sampling devices. Groundwater samples were collected from MW1, MW2, MW3, MW4, MW5, MW6 and MW7.
Sample Preservation	Samples were placed in laboratory-supplied bottles containing appropriate preservatives. Samples were stored on ice in an esky whilst on-site and in transit to the laboratory. Samples collected for metals analysis were filtered on-site to 0.45 µm and put in to preserved laboratory supplied bottles.
Decontamination Procedure	Decontamination was not required on most sampling equipment as it was dedicated for each individual well. The interface probe was washed in Decon 90 solution and rinsed with potable water between measurements.
Disposal of Purged Groundwater	Purged water was contained on-site in 1 x 205L drum prior to disposal by Volman Enterprises Pty Ltd in accordance with NSW Regulations. Waste disposal certificates are presented in <b>Appendix E</b> .

### 5.3 Utility Pit Vapour Survey

As part of the Post Phase 2 ESA, a utility pit vapour survey was undertaken at the Site. The locations of the utility pits are shown in **Figure 3**. A summary of the utility pit vapour monitoring survey methodology and activities are presented in the following table.

## 5 Environmental Site Assessment Methodology

Table 5-3 Utility Pit Survey Activity Summary

Activity/Item	Details
Utility Pit location	The location of the utility pits was established in consultation with the service utility plans and from visual observations ( <b>Figure 3</b> ).
Vapour Survey	Seven utility pits located on-site and adjacent to the Site (UP1-UP7) along Market Street, Monaro Street and Wonga Street were surveyed with a PID for VOCs on the 21 May 2009. PID readings were obtained by inserting the PID probe through an opening in the utility pit cover and monitoring for 1 minute at each location.
Instrument Type	Qrae PID
Date Instrument Calibrated and Calibration standard used	21 May 2009, standard 100 ppm isobutylene, refer to <b>Appendix A</b> for calibration certificates.

## Results

### 6.1 Site Specific Geology

Bore logs illustrating the geology encountered during drilling are presented in **Appendix D**. Cross sections drawn both parallel and transverse to the groundwater flow direction are included in **Figures 4a and 4b**.

Based on the drilling conducted during this investigation and the previous investigation by IT Environmental (2005b), the local geological details are summarised as indicated below.

Table 6-1 Local Geological Details

Depth (mbgs)	Lithology
0.0 to 0.2	Concrete
0.2 to ~0.5	Fill Material: sand, grey-white, medium grained, some rocks and concrete rubble
~0.5 to ~4.0	Sand: grey, fine to medium grained, sub-rounded, poorly graded
~4.0 to ?	Clay: red with white to grey mottling, medium plasticity, some sand present

Sand fill was present at MW5 to 0.9 mbgs, at MW6 to 0.7 mbgs and at MW7 to 0.8 mbgs. Refusal was encountered on large concrete blocks at MW5 during NDD. The monitoring well was relocated approximately 1 m to the north.

### 6.2 Site Specific Hydrogeology

Description of the site-specific hydrogeology is based on observations made during the Site inspection, the drilling of bores, the installation of the monitoring wells and subsequent groundwater monitoring and sampling. The site-specific hydrogeology is summarised in the following table.

Table 6-2 Site Specific Hydrogeology

Parameter	Description
Groundwater Occurrence	An unconfined shallow aquifer was encountered at approximately 1.5 mbgs in the sand sequence beneath the Site. Standing water levels (SWLs) across the Site varied between 1.26 and 1.79 mBTC. A summary of SWLs, including available historical results, is presented in <b>Table 5</b> (attached).
Occurrence of PSH	No PSH was encountered in any of the monitoring wells. A hydrocarbon sheen was noted in MW5.
Groundwater Elevation and Flow Direction	Groundwater elevations across the Site varied between 0.59 mAHD (MW1 and MW2) and 0.87 mAHD (MW4). Groundwater elevations in all wells are tabulated in <b>Table 5</b> and inferred groundwater contours for the aquifer are presented graphically on <b>Figure 5</b> . From the contours, the inferred direction of groundwater in the aquifer is south east towards the Merimbula Lake.
Hydraulic Gradient	The hydraulic gradient calculated from the inferred groundwater contours is approximately 0.008.
Hydraulic Conductivity	Based on literature values for the type of the lithology encountered beneath the Site, the hydraulic conductivity of the aquifer is estimated to be in the order of 0.0173 to 17.28 m/day (Domenico & Schwartz, 1990).

## 6 Results

Parameter	Description
Groundwater Velocity	Assuming an effective porosity of 26-53 % (Domenico & Schwartz, 1990), typical for a fine grained sand, the groundwater velocity beneath the Site is estimated to be in the order of approximately 0.1 to 195 m/year.
Beneficial Groundwater Use	Groundwater salinity, as calculated from EC readings <sup>1</sup> , varies from 255 to 869 mg/L indicating that the most sensitive beneficial uses of groundwater would be protection of aquatic ecosystems and domestic use. Discussion of the beneficial uses of the groundwater is provided in Section 6.4.1 as part of the selection of appropriate groundwater investigation levels for the Site.
Field Parameter Measurement	Ex-situ measurements of dissolved oxygen (DO), oxidation / reduction potential (redox), pH, electrical conductivity are presented in Table 6. Dissolved oxygen ranged from 2.76 ppm to 3.67 ppm. Corrected redox potential ranged from 165 mV to 266 mV. pH ranged from 6.0 to 6.4. Electrical conductivity ranged from 393 to 1337 µS/cm.
Anomalies in Field Data	No anomalies were noted within the field data.

### 6.3 Field Observations of Impact

Field observations of soil and groundwater impact are detailed below in Table 6-3 and 6-4.

Table 6-3 Field Observations of Impact - Soil

Sample No.	PID Result	Notable odours	Comments
MW5_1.8-2.0	45.3	Hydrocarbon odour noted	Sample was collected at or just below the water table.

Table 6-4 Field Observations of Impact - Groundwater

Well No.	Sheen	Notable odours	Comments
MW5	Slight sheen present	Hydrocarbon odour noted	

### 6.4 Field and Laboratory Analytical Results

#### 6.4.1 Applicable Acceptance Criteria

For the purposes of this Report, "Acceptance Criteria" are the adopted investigation levels (ILs) which are:

- adopted by applicable state or national regulatory authorities and/or prescribed under Environmental Laws as at the date of the Report; and/or
- determined by reference to risk assessment principles and processes.

#### Soil Acceptance Criteria

The acceptance criteria adopted for comparison of the soil analytical results from this PP2 ESA are discussed below. The adopted soil assessment criteria (SAC) are summarised in Table 7.

<sup>1</sup> EC reading (µg/cm) x 0.65 = TDS (mg/L)



## 6 Results

### ***NEPM Health Based Investigation Levels***

The NEPM (1999a) provides risk-based Health Investigation Levels (HIL) for selected organic and inorganic chemicals in soils. Different levels are provided for a variety of exposure settings including residential, open-space/parks/recreational and commercial/industrial land uses. The NEPM HILs have been developed to be protective of human health and do not take into account environmental concerns. The Site is currently zoned by Bega Council as 3(a) General Business Zone, which allows commercial and residential land use. The soil analytical results have therefore been compared to NEPM Level F (Commercial/Industrial) and NEPM Level D (Residential with minimal opportunities for soil access) concentrations for available analytes.

### ***NEPM Ecological Investigation Levels***

The NEPM (1999a) provides interim Ecological Investigation Levels (EIL) for some analytes in an urban setting for selected organic and inorganic chemicals in soils based on considerations of phytotoxicity, ANZECC B levels and soil survey data from urban residential properties in four Australian capital cities. EILs have been adopted in instances where a HIL was not available.

### ***NSW EPA Guidelines***

In lieu of reliable threshold concentrations set for benzene, toluene, ethylbenzene, total xylene and unspciated total petroleum hydrocarbons (TPH) within the NEPM guidelines, the NSW EPA *Guidelines for Assessing Service Station Sites* (1995) threshold concentrations has been adopted as the investigation levels for these analytes. It is noted that the NSW EPA Guidelines are intended for assessment of sensitive land uses and are therefore considered to be conservative for the 3(a) General Business zoning of the Site.

### ***Groundwater Acceptance Criteria***

The groundwater acceptance criteria (GAC) adopted for comparison of the groundwater analytical results from this PP2 ESA are discussed below. The adopted GAC are summarised in **Table 8**.

### ***ANZECC/ARMCANZ Guidelines***

An assessment of the quality of groundwater at the Site was carried out with reference to the Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) trigger values for the protection of aquatic ecosystems.

The 95% trigger values for protection of marine water ecosystems were adopted based on the potential receiving water body for Site groundwater being Merimbula Lake, which is tidal. As the ANZECC/ARMCANZ (2000) guidelines are surface water guidelines they have been adopted as a screening tool only, and exceedances of these trigger values does not automatically mean remedial action is required. Where no trigger values are provided, the low reliability indicative interim working levels (IIWL) were adopted.

No guideline values exist for TPH in groundwater that are considered appropriate for this monitoring program. Low reliability IIWLs provided in the ANZECC/ARMCANZ (2000) guidelines refer to a trigger value of 7 µg/L. This is based on US EPA methodology, which is generally not used in deriving guidelines for Australian conditions. More importantly, the values are based on the toxicity to

## 6 Results

crustaceans from North-West Shelf crude oils. As such, the IIWL for TPH is not considered appropriate.

### **Australian Drinking Water Guidelines**

The National Health and Medical Research Council (NHMRC) (2004) Australian Drinking Water Guidelines (ADWG) have been adopted for this investigation due to the potential beneficial use of the water for domestic use (based on low salinity).

The NHMRC and ARMCANZ developed the Australian Drinking Water Guidelines, updated in 2004. The guidelines provide health-based and aesthetic values for a range of micro-organisms, physical quality, inorganic chemicals, organic chemicals, radiological quality and pesticides. The health-based guideline values, which have been used to identify contaminants of potential concern in the groundwater, are concentrations which, based on present knowledge, do not result in any significant risk to the health of a consumer of the water over a lifetime. These guidelines are recognised within the NEPM Schedule B(6) Guideline on Risk Based Assessment of Groundwater Contamination (NEPC, 1999b) and Environment Protection and Heritage Council (EPHC)<sup>2</sup> as relevant Investigation Levels for the assessment of human health issues at the point of extraction (for use as drinking water – protection of human health issues associated with use of water as domestic supply within households<sup>3</sup>). These guidelines are more current and extensive than the ANZECC/ARMCANZ (2000) Guidelines for Recreational Water Quality and Aesthetics (relevant to lower levels of exposure than drinking water).

### **6.4.2 Analytical Program**

#### **Soil Sampling**

A total of 19 primary soil samples, 1 field duplicate and 1 field triplicate sample were collected during the investigation. Of these, 6 primary soil samples (2 from each borehole), 1 field duplicate sample and 1 field triplicate sample were submitted for analysis for the identified contaminants of potential concern, which included the following:

- Total Petroleum Hydrocarbons (TPHs);
- Benzene, toluene, ethylbenzene and xylenes (known as BTEX);
- Volatile hydrocarbons (VHCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Phenols; and
- Inorganics including arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), copper (Cu), nickel (Ni), lead (Pb), mercury (Hg), vanadium (V) and zinc (Zn).

The analyses scheduled for each sample are shown in the COCs included in **Appendix H**.

<sup>2</sup> National Chemical Reference Guide, Australian Department of the Environment and Heritage, Environment Protection and Heritage Council, Supporting documentation and online database available at: [http://hermes.erin.gov.au/pls/crg\\_public/CRGPPUBLIC.pStart](http://hermes.erin.gov.au/pls/crg_public/CRGPPUBLIC.pStart)

<sup>3</sup> Australian Drinking Water Guidelines (NHMRC, 2004) provide guideline values for water that are considered to be safe for "human consumption, either directly, as supplied from the tap, or indirectly, in beverages, ice or foods prepared with water. Drinking water is also used for other domestic purposes such as bathing and showering". The guidelines apply to any water intended for drinking irrespective of the source (municipal supplies, rainwater tanks, groundwater bores etc.). The methodology used to derive the guidelines allows for exposures other than ingestion (dermal contact and inhalation including inhalation of volatiles during activities such as showering in heated water). Hence the guidelines are considered relevant for the assessment of pathways of exposure that may be associated with use of groundwater.

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Primary samples were delivered to the ALS Laboratory Group (ALS) in Sydney for analyses, while field triplicate samples were submitted to LabMark in Melbourne. All laboratories are registered by NATA for the analyses required.

Two samples from each borehole were selected for analysis on the basis of field observations and sample depth.

### Groundwater Sampling

A total of 7 primary groundwater samples, 1 field duplicate sample and 1 field triplicate sample were collected during the investigation. The samples were submitted for analysis for the identified contaminants of potential concern, which included the following:

- Total Petroleum Hydrocarbons (TPHs);
- Benzene, toluene, ethylbenzene and xylenes (known as BTEX);
- Volatile hydrocarbons (VHCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Phenols; and
- Inorganics including arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), vanadium (V) and zinc (Zn).

The analyses scheduled for each sample are shown in the COCs included in **Appendix H**.

Primary samples were delivered to the ALS Laboratory Group (ALS) in Sydney for analyses, while field triplicate samples were submitted to LabMark in Melbourne. All laboratories are registered by NATA for the analyses required.

### Quality Assurance / Quality Control Sampling

Quality assurance and quality control (QA/QC) samples were collected during each sampling event. This included 2 trip blanks, 2 field blanks, 2 rinsate blanks and 2 field duplicates, which were submitted to ALS, and 2 field triplicates which were submitted to LabMark for analysis.

#### 6.4.3 Field Method Validation

Field method validation details are outlined below:

Table 6-5 Field Method Validation

Requirement	Yes/No	Comments
Monitoring bores drilled with solid stem augers.	Yes	Push tubing was used to collect soil samples in boreholes. Bores requiring installation of monitoring wells were subsequently reamed with solid augers.
Drilling and sampling equipment decontaminated correctly.	Yes	Solid stem augers were decontaminated with high pressure water. Hand auger and pushtube housing were decontaminated between each sample with Decon90 and water.
Soil sampled with pushtube.	Yes	Soil samples were collected using pushtube with disposable, single use inserts.

## 6 Results

Requirement	Yes/No	Comments
Monitoring wells were developed and purged according to standard URS protocol and Mobil Oil Australia Pty. Ltd. specifications.	Yes	Groundwater monitoring wells were developed using Waterra footvalve until approximately 5 well volumes were removed.
Sample Preservation	Yes	Soil and groundwater samples were appropriately preserved and stored on ice prior to arrival at the laboratory.  Sample temperatures recorded by the laboratory upon receipt were 1.3°C and 5.8°C which is within the allowable range of 2-6°C.
Samples delivered to laboratory within sample holding times.	Yes	Soil and groundwater samples were delivered to the laboratory with at least 50% of the holding time remaining. Sample analyses were conducted within holding time.

### 6.4.4 Analytical Data Validation

Analytical data validation is the process of assessing whether data are in compliance with method requirements and project specifications. The primary objectives of this process are to ensure that data of known quality are reported, and to identify if the data can be used to fulfil the overall project objectives.

The data validation guidelines adopted are based upon data validation guidance documents published by the United States Environmental Protection Agency (US EPA). These include the *US EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, June 2008; the *US EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004; and the *US EPA Guidance on Environmental Data Verification and Data Validation*, November 2002. The process involves the checking of analytical procedure compliance and an assessment of the accuracy and precision of analytical data from a range of quality control measurements, generated from both the field sampling and analytical programs.

Specific elements that have been checked and assessed for this project include:

- preservation and storage of samples upon collection and during transport to the laboratory;
- sample holding times;
- use of appropriate analytical and field sampling procedures;
- required limits of reporting;
- frequency of conducting quality control measurements;
- rinsate, field and trip blank results;
- laboratory blank results;
- field duplicate and triplicate results;
- laboratory duplicate results;
- matrix spike (MS) results;
- surrogates spike results;
- review of chromatograms; and
- the occurrence of apparently unusual or anomalous results, e.g., laboratory results that appear to be inconsistent with field observations or measurements.

## 6 Results

Specific elements that have been checked and assessed for this project are detailed in **Appendix I**.

### **Analytical Data Quality – Soil**

Analytical results for QC data are detailed in the relevant primary results tables (duplicates) and in **Table 11a** (blanks). Detailed laboratory QC data is presented in the analytical reports in **Appendix H**.

On the basis of the analytical data validation procedure employed, the overall quality of the soil analytical data produced is considered to be of an acceptable standard for interpretive use. The data validation process identified a number of QA/QC issues. The issues are summarised in **Appendix I**.

### **Analytical Data Quality – Groundwater**

Analytical results for QC data are detailed in the relevant primary results tables (duplicates) and in **Table 11b** (blanks). Detailed laboratory QC data is presented in the analytical reports in **Appendix H**.

On the basis of the analytical data validation procedure employed, the overall quality of the groundwater analytical data produced is considered to be of an acceptable standard for interpretive use. The data validation process identified a number of QA/QC issues. The issues are summarised in **Appendix I**.

### **6.4.5 Soil Sample Analytical Results**

Table 6-6 below provides a summary of soil analytical results compared against the adopted investigation levels (SAC). Soil analytical results for each parameter are presented in the following attached tables:

TPH, BTEX & Lead

**Table 9a**

PAHs & Phenols

**Table 9b**

Metals and VHCs

**Table 9c**

**Figure 6** also provides a graphical presentation of TPH, BTEX and lead results for each soil borehole. Analytical laboratory reports for all soil samples are attached in **Appendix H**.

**Table 6-6 Soil Analytical Results Summary**

No. of Primary Samples Analysed	Constituent	Min Conc. (mg/kg)	Max Conc. (mg/kg)	Samples Exceeding Adopted SAC
6	Benzene	<0.2	<0.2	No samples exceeded the adopted SAC
6	Toluene	<0.5	<0.5	No samples exceeded the adopted SAC
6	Ethylbenzene	<0.5	<0.5	No samples exceeded the adopted SAC
6	Total xylene	<1.0	<1.0	No samples exceeded the adopted SAC
6	TPH (C <sub>6</sub> -C <sub>9</sub> )	<10	<10	No samples exceeded the adopted SAC
6	TPH (C <sub>10</sub> -C <sub>14</sub> )	<50	<50	No samples exceeded the adopted SAC
6	TPH (C <sub>15</sub> -C <sub>28</sub> )	<100	<100	No samples exceeded the adopted SAC
6	TPH (C <sub>29</sub> -C <sub>36</sub> )	<100	<100	No samples exceeded the adopted SAC

## 6 Results

No. of Primary Samples Analysed	Constituent	Min Conc. (mg/kg)	Max Conc. (mg/kg)	Samples Exceeding Adopted SAC
6	Total PAHs	Not detected	Not detected	No samples exceeded the adopted SAC
6	Naphthalene	<0.5	<0.5	No samples exceeded the adopted SAC
6	Benzo(a)pyrene	<0.5	<0.5	No samples exceeded the adopted SAC
6	Total Phenols	Not detected	Not detected	No samples exceeded the adopted SAC
6	Arsenic	<5	<5	No samples exceeded the adopted SAC
6	Barium	<10	120	No samples exceeded the adopted SAC
6	Cadmium	<1	1	No samples exceeded the adopted SAC
6	Chromium (Total)	<2	14	No samples exceeded the adopted SAC
6	Copper	<5	69	No samples exceeded the adopted SAC
6	Lead	<5	205	No samples exceeded the adopted SAC
6	Mercury	<0.1	0.1	No samples exceeded the adopted SAC
6	Nickel	<2	14	No samples exceeded the adopted SAC
6	Vanadium	<5	8	No samples exceeded the adopted SAC
6	Zinc	<5	452	No samples exceeded the adopted SAC
6	VHCs	Not detected	Not detected	No samples exceeded the adopted SAC

### 6.4.6 Groundwater Sample Analytical Results

**Table 6-7** below provides a summary of groundwater analytical results compared against the adopted groundwater assessment criteria (GAC). Groundwater sample analytical results for each parameter are tabulated in the following attached tables:

TPH, BTEX & Lead

**Table 10a**

PAHs & Phenols

**Table 10b**

Metals and VHCs

**Table 10c**

**Figure 7** also provides a graphical presentation of TPH, BTEX, naphthalene and selected metal results for each monitoring well. Analytical laboratory reports for all groundwater samples are attached in **Appendix H**.

## 6 Results

Table 6-7 Groundwater Analytical Results Summary

No. of Primary Samples Analysed	Constituent	Min Conc. (µg/L)	Max Conc. (µg/L)	Samples Exceeding Adopted GAC
7	Benzene	<1	<1	No samples exceeded the adopted GAC
7	Toluene	<5	<5	No samples exceeded the adopted GAC
7	Ethylbenzene	<2	10	MW7 exceeded the adopted GAC
7	Total xylene	<4	<4	No samples exceeded the adopted GAC
7	TPH (C <sub>6</sub> -C <sub>9</sub> )	<20	<20	No samples exceeded the adopted GAC
7	TPH (C <sub>10</sub> -C <sub>14</sub> )	<50	260	No samples exceeded the adopted GAC
7	TPH (C <sub>15</sub> -C <sub>28</sub> )	<50	2400	No samples exceeded the adopted GAC
7	TPH (C <sub>29</sub> -C <sub>36</sub> )	<50	450	No samples exceeded the adopted GAC
7	Total PAHs	Not detected	4.2	No samples exceeded the adopted GAC
7	Naphthalene	<1	4.2	No samples exceeded the adopted GAC
7	Benzo(a)pyrene	<0.5	<0.5	No samples exceeded the adopted GAC
7	Total Phenols	Not detected	Not detected	No samples exceeded the adopted GAC
7	Arsenic	0.002	0.028	MW1, MW2, MW3, MW4 and MW6 exceeded the adopted GAC
7	Barium	0.014	0.054	No samples exceeded the adopted GAC
7	Cadmium	<0.0001	0.0002	No samples exceeded the adopted GAC
7	Chromium (Total)	0.002	0.006	No samples exceeded the adopted GAC
7	Copper	<0.001	<0.001	No samples exceeded the adopted GAC
7	Lead	<0.001	<0.001	No samples exceeded the adopted GAC
7	Mercury	<0.0001	<0.0001	No samples exceeded the adopted GAC
7	Nickel	<0.001	0.001	No samples exceeded the adopted GAC
7	Vanadium	<0.01	0.02	No samples exceeded the adopted GAC
7	Zinc	0.012	0.67	MW1, MW3, MW4 and MW6 exceeded the adopted GAC
7	VHCs	Not detected	Not detected	No samples exceeded the adopted GAC

### 6.4.7 Utility Pit Vapour Monitoring Results

Vapour monitoring was conducted using a PID in utility pits located within a 20 m radius of the Site. The locations of the utility pits are shown on **Figure 3**.

Each pit was monitored for a minimum of 5 minutes duration. The results of the utility pit vapour monitoring are presented in the table below.



## 6 Results

Table 6-8 Utility Pit Vapour Monitoring - Record of VOC Reading

Pit No.	Utility Pit Type	Depth Sampled (mbgs)	Duration of Sampling (min)	Highest VOC Reading (ppm)	Comments/ Observations
UP1	Stormwater	~0.1	~1	0	None
UP2	Telstra	~0.1	~1	0	None
UP3	Telstra	~0.1	~1	0	None
UP4	Stormwater	~0.1	~1	0	None
UP5	Stormwater	~0.1	~1	0.3	None
UP6	Stormwater	~0.1	~1	0.4	None
UP7	Sewerage	~0.1	~1	0	None

The benzene equivalent PID readings were compared with benzene concentrations listed in the Safe Work Australia *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)]*. The standard lists a time weighted average (over 8 hours) benzene concentrations of 5 ppm. The results of the utility monitoring represent all VOCs and show that values are below 5 ppm and suggest that the potential for exposure to hydrocarbon vapours through these pits is currently low.

## Discussion

### 7.1 Extent of Soil Impact

The vertical and lateral extent of soil impact encountered during this investigation in soil boreholes at the Site is presented in **Figures 4a, 4b and 6**.

TPH, BTEX, PAH, phenol and VHC concentrations in soil samples selected for analyses were less than the LOR.

Concentrations of metals detected in soil samples were less than the adopted SAC. Metals concentrations were generally low and likely to be at naturally occurring levels.

Soil samples were selected for analyses from depths of between 0.2 and 1.2 mbgs. The water table was approximately 1.5 mbgs on-site, therefore soil samples collected from depths of greater than approximately 1.5 mbgs may be representative of groundwater conditions. No soil samples collected from below the water table were selected for analyses.

PID concentrations presented in **Appendix D** indicate that the concentration of volatile organic compounds was highest in MW5 at a depth of 1.8 to 2.0 mbgs. This sample was not selected for analyses as it was collected from below the water table and therefore considered to be representative of groundwater conditions.

### 7.2 Extent of Groundwater Impact

The inferred extent of groundwater impact is presented in **Figures 4a, 4b and 7**.

All 7 groundwater monitoring wells reported semi-volatile (TPH C<sub>10</sub>-C<sub>36</sub>) hydrocarbon impact above the LOR. It is therefore inferred that dissolved phase petroleum hydrocarbon impact is present beneath the majority of the Site. The only semi-volatile analyte detected above the LOR was naphthalene in MW4, MW5, MW6 and MW7 at concentrations less than the adopted GAC.

The TPH C<sub>10</sub>-C<sub>36</sub> concentrations indicate that the hydrocarbon impact present in the groundwater on-site is likely to be oil rather than a fuel. The TPH C<sub>10</sub>-C<sub>36</sub> chromatograms for groundwater samples from MW1 to MW7 are presented in **Appendix H**. The relatively low concentrations make source identification difficult, however, the chromatogram for MW7 appears to be oil. Potential sources of impact are discussed in **Section 9.3.1**.

Volatile hydrocarbon concentrations (TPH C<sub>6</sub>-C<sub>9</sub>) in groundwater were generally less than the LOR. The exception to this was MW7 which contained an ethylbenzene concentration exceeding the GAC. The low TPH C<sub>6</sub>-C<sub>9</sub> and BTEX concentrations indicate that petrol is unlikely to be a source of the identified groundwater hydrocarbon impact.

Analysis for metals in groundwater samples from all monitoring wells generally reported low concentrations around expected background levels (although some exceeded the adopted GAC). Concentrations of arsenic and zinc exceeding the GAC are likely to represent background concentrations.

It is noted that groundwater elevation data measured as part of the investigation suggests the groundwater flow direction is to the south east towards Merimbula Lake.

A graphical representation of the groundwater contamination is shown in the Site Conceptual Model presented as **Figure 8**.

## 8 Qualitative Risk Assessment

# 8

### Qualitative Risk Assessment

#### 8.1 Introduction

A qualitative evaluation of potential risk to human health and the environment has been undertaken on the basis of the available information. The aim of the qualitative risk assessment is to identify potential receptors and exposure pathways that may be relevant for the Site and surrounding areas on the basis of current or proposed land use and the nature and extent of the impacts identified. The qualitative assessment utilises this information to identify key issues associated with on-site and off-site areas that have the potential to present unacceptable risks to human health and/or the environment and that may require further evaluation.

To facilitate the qualitative risk assessment of the Site (and surrounding areas), a "Tier 1" evaluation has been conducted. A Tier 1 evaluation involves a comparison of concentrations reported in soils and groundwater with generic values (i.e. not site-specific) that are relevant for the identified exposure pathways and receptors groups (including on-site petroleum use, commercial/industrial, residential and environmental as required).

The Tier 1 values used in this assessment have been selected in accordance with the Mobil Oil Australia Pty Ltd "Environmental Site Assessments Specification, Module 3 – Phase 2 Environmental Site Assessments" (Section 11.4.15 and Section 3). This approach utilises current, published and approved Tier 1 values for soils and groundwater (as for relevant receptors and pathways) that are derived from NEPM, enHealth, ANZECC, NHMRC and NSW EPA Service Station Guidelines. The Tier 1 levels provided in the AIP (Final Draft April 1999) "Guidelines for the Management of Petroleum Hydrocarbon Impacted Land" are only appropriate when the Site is continuing use as a petroleum handling facility, and hence in this instance have not been adopted as Tier 1 criteria.

#### 8.2 Chemicals of Potential Concern

Chemicals of potential concern (COPC) are chemicals which are known or suspected to be present at concentrations high enough to warrant inclusion in an assessment of risks to human health. The identification of COPC is based on the following:

- An assessment of the nature and extent of these chemicals in the environment at the Site; and
- A comparison of analytical results for soil and groundwater samples associated with hydrocarbon impact with relevant human health or environmental investigation levels.

Based on the nature and extent of impacts (discussed in **Section 7** - Extent of Groundwater and Soil Impact) and a summary of analytical results (presented in **Section 6**), the following were identified as COPC at the Site:

##### *Human Health*

Soil	Semi-volatile TPH (C <sub>10</sub> -C <sub>36</sub> ).
Groundwater	Ethylbenzene, arsenic, zinc, and volatile and semi-volatile TPH.

## 8 Qualitative Risk Assessment

### *Environmental*

Soil

Semi-volatile TPH (C<sub>10</sub>-C<sub>36</sub>).

However, there is no on-site environment (soils) to consider.

Groundwater

Ethylbenzene, arsenic, zinc and volatile and semi-volatile TPH.

It should be noted that the presence of chemicals at concentrations higher than the investigation levels does not indicate a risk; rather it indicates that potential exposures to these chemicals must be evaluated in greater detail, reflecting site-specific pathways of exposure (discussed further below) or a quantitative risk assessment.

### 8.3 Revised Site Conceptual Model

#### 8.3.1 Potential Sources

##### *Primary*

Based on the presence of semi-volatile hydrocarbon impact in groundwater beneath the Site, the following infrastructure at the Site could be a source of the identified impact:

- Spillage or leak of fuel from USTs, together with associated pipework and dispensing infrastructure;
- Fresh and waste oil storage and associated pipework infrastructure in the workshop; and
- Seepage of hydrocarbon product from spills.

##### *Secondary*

Potential secondary sources of impact are likely to exist at the Site in the form of:

- Hydrocarbon contaminated soil beneath the Site; and
- Although phase separated hydrocarbons (PSH) have not been found on-site, if present, it may be a source of hydrocarbon contamination to soils it contacts and an ongoing source of dissolved phase contamination to groundwater.

##### *Off-Site*

No significant off-site sources of hydrocarbons were identified within a 100 m radius of the Site.

An interview was conducted with Mrs Shirley Bazley, Hon Curator at The Old School Museum on 14 May 2009. She indicated that a service station was located opposite the Site on the eastern side of Market Street. It was present in a photograph of the area taken in the 1930s and replaced by shops in the 1980s. Due to the south easterly groundwater flow direction, this is unlikely to be an off-site source of the identified hydrocarbon groundwater impact.

The service stations located on Merimbula Drive approximately 200 m and 350 m to the north west of the Site are unlikely to be potential off-site sources of hydrocarbon impact due to the low solubility and high retardation factor of heavy end hydrocarbons. The detection of semi-volatile TPH in the upgradient monitoring well (MW4) may indicate the contaminant source is site wide or off-site and upgradient.

No other potential off-site sources of hydrocarbon contamination were identified.

A graphical representation of potential hydrocarbon sources at the Site is shown in the Site Conceptual Model presented as **Figure 9**.

## 8 Qualitative Risk Assessment

### 8.3.2 Nature and Extent of Impact

#### *Soil*

As discussed in **Section 7.1**, hydrocarbon impacts were not encountered in soils at depths of less than 1.5 mbgs (above the groundwater table) on-site during the current investigation. The Phase 2 ESA conducted by IT Environmental (2005b) identified hydrocarbon impacted soil (as TPH C<sub>10</sub>-C<sub>36</sub>) in soil borehole SB7 located along the western boundary of the Site at a depth of 0.5 mbgs. The shallow soil impact at SB7 may be a localised source of impact. Based on the results of the current investigation, this impact is considered adequately delineated.

#### *Groundwater*

As discussed in **Section 7.2**, dissolved phase hydrocarbon impacts (TPH C<sub>10</sub>-C<sub>36</sub> and naphthalene) were encountered in all groundwater monitoring wells on-site. The Phase 2 ESA conducted by IT Environmental (2005b) identified low concentrations of TPH C<sub>10</sub>-C<sub>36</sub> in MW4. Hydrocarbon impact was not found in the other monitoring wells during the IT Environmental assessment (2005b).

No PSH was reported in monitoring wells on the Site during the current investigation or the previous investigation by IT Environmental (2005b).

The current investigation has not delineated these impacts to the south east, the expected groundwater flow direction and hence impacts may extend off-site in this direction. Due to the low solubility and high retardation factor of heavy end hydrocarbons the migration of semi-volatile hydrocarbon impact off-site is expected to be slow.

#### *Fate and Transport*

Based on the findings of the Post Phase 2 ESA, the potential pathways for the migration of the impacts detected at the Site appear to include:

- Vertical seepage of hydrocarbons, originating from surface spills and leaks, and from leaking tanks, pipelines and pumps, through the surface material into the underlying natural material and into the local groundwater system. The presence of impacted groundwater in wells on-site indicates that this may have occurred.
- Leaching of hydrocarbons present in the unsaturated zone through surface infiltration, leaking utilities or fluctuating water table.
- Lateral migration of impacted groundwater through the aquifer. The presence of impacted groundwater in monitoring wells MW1, MW2 and MW3 indicates that this may have occurred between the Phase 2 ESA conducted by IT Environmental in 2005 and the current investigation conducted in May 2009.
- Migration of impacted perched water through utility trenches. Given the shallow depth to groundwater in the aquifer (<1.5 mbgs), there is potential for service trenches to act as preferred pathways for migration of contaminants.
- Attack / permeation of hydrocarbons into underground utilities i.e. through PCV or PE mains water pipes.

The fate of hydrocarbon plumes on and off-site given an assumed south easterly groundwater flow direction, estimated aquifer seepage velocity and the identified potential pathways is summarised as follows:

- Hydrocarbon impacted groundwater is present beneath the Site.

## 8 Qualitative Risk Assessment

- The inferred flow direction of the aquifer beneath this area is to the south east at a velocity of between 0.1 and 195 m/yr.
- The hydrocarbon impact is delineated on-site, however is not delineated off-site to the south-east in the inferred direction of groundwater flow. Given the hydrocarbon concentrations reported in well MW1 and MW2, located less than 10 m from the south eastern Site boundary, there is potential that the plume has migrated off-site across this boundary and will continue to do so in the future.

### 8.4 Potential Receptors and Exposure Pathways

Potential human and environmental receptors and pathways for the contaminants of concern identified within soil and groundwater on-site include:

- Inhalation of volatile COPC by future occupants of the Site and existing occupants of the residential and commercial properties adjacent to the Site. However, this potential would be mitigated by the low volatile concentrations. Soil gas assessments have not been undertaken to quantify the potential and are not recommended;
- Potential current and future uses of the aquifer for drinking water (ingestion and dermal contact), irrigation (inhalation, ingestion and dermal contact) or recreational purposes (inhalation, ingestion and dermal contact) on-site and down hydraulic gradient of the Site. The Site is located within an area of reticulated water supply and it is not considered that groundwater would be extracted for drinking water purposes. No registered bores were located within a 500 m radius of the Site;
- Contact with soils (ingestion and dermal contact) and inhalation of volatile contaminants by workers conducting sub-surface excavation or entering service trenches or pits in on-site or off-site areas is possible. Soils data from the IT Environmental investigation (2005b) indicates that concentrations of TPH (C<sub>10</sub>-C<sub>36</sub>) exceeded the adopted SAC.
- Ecosystem receptors of groundwater discharge would include Merimbula Lake, located approximately 40 m hydraulically downgradient of the Site to the south east. However, the low solubility and high retardation factor of heavy end hydrocarbons would mitigate this somewhat.

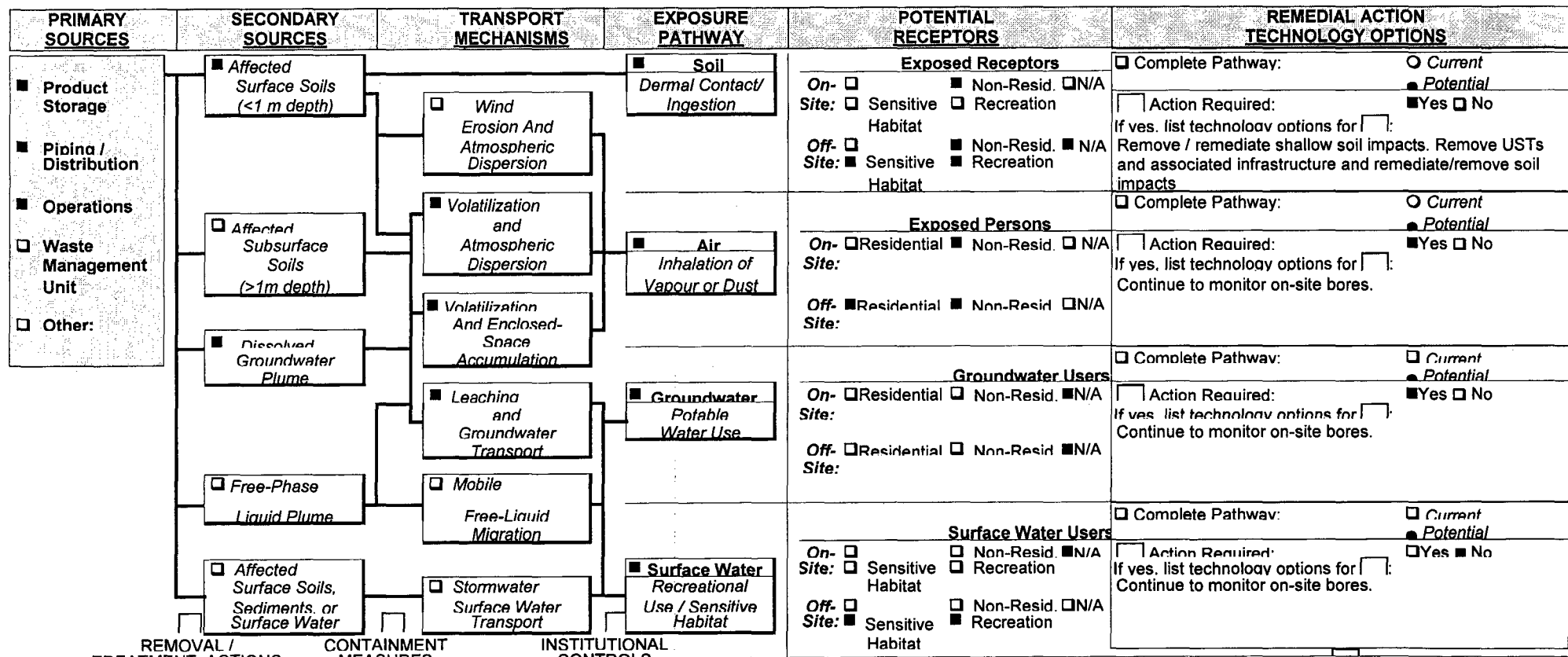
### 8.5 Exposure Evaluation

An Exposure Evaluation Flowchart (EEF) that assesses the relationship between the source area of COPC, potential migration pathways and the identified potential receptors is presented below.

## Section 8

## Qualitative Risk Assessment

Table 8-1 Exposure Evaluation Flowchart



The above flowchart is based on ASTM E1739-95 Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites - 95 (E1-1996). Guidance for use of this flowchart is presented within ASTM E 1739.

## 8.6 Tier 1 Outcomes

### 8.6.1 Soil

For the purpose of this qualitative risk assessment, the SAC have been referenced with consideration of the beneficial uses of the Site in **Table 7**.

A comparison of soil analytical data and the SAC is presented in **Tables 9a to 9c** and discussed in **Section 7.1**. Soil impacts were limited to one shallow soil sample collected from SB7 during the IT Environmental investigation (2005b), which contained a semi-volatile TPH (C<sub>10</sub>-C<sub>36</sub>) concentration that exceeded the SAC. No exceedances of the SAC were noted in nearby soil samples collected from SB6, MW7 or MW1, indicating that the exceedance of the SAC in SB7 maybe a localised impact. The SAC concentration for TPH C<sub>10</sub>-C<sub>36</sub> is taken from the NSW EPA *Guidelines for Assessing Service Station Sites* (1995), which are intended for assessment of sensitive land uses. The guideline is therefore conservative for the current and proposed land use. ] ✓

### 8.6.2 Groundwater

For the purpose of this qualitative risk assessment, the GAC have been referenced with consideration of the beneficial uses of groundwater beneath the Site in **Table 8**. It is noted that the Site is located within the Merimbula township, where there is a reticulated water supply, hence it is not expected that groundwater would be extracted for domestic use on-site or off-site.

A comparison of groundwater analytical data and GAC is presented in **Tables 10a to 10c** and discussed in **Section 7.2**. It should be noted that there are no available guidelines for TPH in groundwater. There were positive results reported for TPH C<sub>10</sub>-C<sub>36</sub>, which indicates that the dissolved phase contamination present in the groundwater is predominately non-volatile. It is not known what concentrations are migrating off-site as there no off-site wells. There are exceedances of the adopted environmental guidelines for ANZECC 2000 (95% protection) for marine environments for ethylbenzene, zinc and arsenic.

With the exception of arsenic, all of the positive concentrations reported were below the adopted human health guidelines (**Table 8**) where available. The exceedances of arsenic in groundwater may be attributable to background concentrations, and as the groundwater is not being extracted for drinking water purposes, the potential risks to human health are considered to be low and acceptable.

### 8.6.3 Human Health Risk Assessment

The conservative nature of the SAC guideline concentration for TPH C<sub>10</sub>-C<sub>36</sub>, and the concrete sealed surface of the Site indicate that risks to human health are considered to be low and acceptable and no further quantification is required.

There were exceedances of the adopted investigation levels for groundwater for human health for arsenic. It is noted that there was positive TPH C<sub>10</sub>-C<sub>36</sub> concentrations in all on-site wells, however, there is no human health screening guideline established for TPH. The arsenic investigation level is based on drinking water quality and as the Site is located within an area of reticulated water supply, it is not considered that groundwater would be extracted for domestic purposes, hence the potential risks to human health are considered to be low and acceptable.

### 8.6.4 Environmental Risk Assessment

As there are no on-site environments and the Site is sealed with concrete, the risks to the environment are considered to be low and acceptable and no further quantification is required.



## 8 Qualitative Risk Assessment

There were exceedances of the adopted environmental investigation levels for groundwater for ethylbenzene, arsenic and zinc. It is noted that there were positive TPH C<sub>10</sub>-C<sub>36</sub> concentrations reported in all on-site wells, however, there is no environmental screening guideline established for TPH. The concentrations that may be migrating off-site are unknown as there are no off-site downgradient monitoring wells.

## Risk Management Options

Risk management options were evaluated based on the findings of the QRA and the Exposure Evaluation Flowchart (**Table 8-1** above) with the aim of mitigating the potential risks to the identified potential receptors. The recommended risk management options are detailed in the following table.

**Table 9-1 Risk Management Options**

Source Media	Transport Mechanism	Exposure Pathway	Actual or Potential	Management Options
Hydrocarbon impacted soils	Contact with and volatilisation from contaminated soils if excavations are undertaken	Dermal contact and inhalation of vapours from contaminated soils. Attack / permeation of subsurface utilities, e.g. PVC / PE water mains.	Potential	Employ appropriate OH&S procedures to minimise dermal contact with contaminated soil and minimise exposure to vapours.
Hydrocarbon impacted groundwater	Contact with fill and impacted groundwater	Maintenance workers	Potential	Investigate potential for migration of dissolved phase hydrocarbons in service trenches running along Market Street, Monaro Street and Wonga Street. Ensure all sub-surface work has appropriate OH&S plan that addresses potential issues associated with contact with impacted groundwater and vapours.

## Conclusions and Third Party Reliance

The results of this investigation indicate that the groundwater beneath the Site is impacted by petroleum hydrocarbons. Due to the semi-volatile nature of the hydrocarbons present in the groundwater, the likely source is the oil storage and infrastructure related to the workshop area. Given the direction and velocity of groundwater flow, dissolved phase impacts have the potential to reach the surface water receptor located approximately 40 m downgradient, however, the low solubility and high retardation factor of the semi-volatile hydrocarbon impact would mitigate this somewhat. Natural attenuation was not assessed during this investigation as a potential effective method of controlling these impacts. On-site UST and associated infrastructure are a potential source of groundwater impacts and should be removed during redevelopment. On-site residual soil impacts are likely to form a minor secondary source of groundwater impact and should be remediated or removed during infrastructure removal. The soil and groundwater concentrations do not pose a potential risk to human health or the environment.

Although concentrations of ethylbenzene, arsenic and zinc in groundwater exceeded the acceptance criteria for commercial/industrial use, the lack of a potential risk to human health and the environment means that the Site is suitable for continued use as a service station or redevelopment for commercial or residential use.

This conclusion is provided strictly in accordance with and subject to the following limitations:

- c) This Report was prepared for Mobil Oil Australia Pty Ltd in accordance with the Acceptance Criteria.
- d) This Report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by URS for use of any part of this Report in any other context.
- e) This conclusion is based solely on the scope of work agreed between URS and Mobil Oil Australia Pty Ltd and described in **Section 1.2** ("Scope of Works") of this Report.
- f) This Report was prepared based on fieldwork undertaken between 13 June 2009 and 21 June 2009 and is based on the conditions encountered and information reviewed at the time of preparation. URS accepts no responsibility for any changes in site conditions that have occurred after this time.
- g) Where this Report indicates that information has been provided to URS by third parties, URS has made no independent verification of this information except as expressly stated in the Report.
- h) Only the chemicals specifically referred to in this Report have been tested for. URS makes no statement or representation as to the existence (or otherwise) of any chemicals other than those specifically referred to.
- i) No investigations have been undertaken into any off-site conditions, or whether any adjoining sites may have been impacted by contamination or other conditions originating from this site.
- j) Subsurface conditions can vary across a particular site and cannot be exhaustively defined by the investigations described in this Report. It is unlikely therefore that the results and estimations expressed in this Report will represent the extremes of conditions at any location removed from the specific points of sampling.
- k) This conclusion is based solely on the information and findings contained in this Report.
- l) Except as specifically stated above, URS makes no statement or representation of any kind concerning the suitability of the site for any purpose or the permissibility of any use.
- m) Use of the site for any purpose may require planning and other approvals and, in some cases, EPA and accredited site auditor approvals. URS offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environment works.

## 10 Conclusions and Third Party Reliance

- n) The ongoing use of the site or use of the site for a different purpose may require the owner/user to manage and/or remediate site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this Report.

### Third Party Use

In this Report a reference to:

1. a) Mobil means:
  - i. Mobil Oil Australia Pty Ltd ABN 88 004 052 984; or
  - ii. an Affiliate; and in this section of this Report;
- b) Affiliate means:
  - i. a corporation owned beneficially or otherwise as to 50% of the voting shares by Mobil; or
  - ii. a related body corporate of Mobil or an Affiliate, provided that the term 'related body corporate' has the meaning ascribed in section 50 of the Corporations Act 2001 (Cth)

but does not include a corporation which has the benefit of this Third Party Use section as a purchaser, lessor or assignee of the Property

In this section of this Report a reference to the "**Interested Party**" means:

1. Where as at the date of this Report Mobil or an Affiliate is or has been the registered proprietor of the Property, the direct purchaser, if any, from Mobil or the Affiliate of the Property; or
2. Where as at the date of this report Mobil or an Affiliate is or has been the lessee of the Property, each of:
  - a) the lessor of the Property to Mobil or the Affiliate; and
  - b) the party who becomes the lessee of the Property as a result of Mobil or its Affiliate assigning its leasehold interest in the Property directly to that party, if any; or
3. Where this Report is to be submitted to a public or regulatory authority pursuant to a requirement under applicable planning or environmental controls, the authority, or
4. Where this Report is to be submitted to an independent environmental auditor, the auditor.

URS acknowledges that an Interested Party may be given a copy of this Report.

URS consents to provision of this Report to an Interested Party on the following conditions:

- a) the Interested Party confirms that it is aware of and understands the scope of the URS engagement as described in this Report;
- b) the Interested Party acknowledges that:
  - i. in carrying out its investigations included in this Report, URS has acted on instructions provided by or on behalf of Mobil or an Affiliate;
  - ii. except as may be expressly stated in this Report, URS make no express or implied representations or warranties as to the suitability of the Property for any current or future use by the Interested Party;

## 10 Conclusions and Third Party Reliance

- iii. the information, comments, conclusions and opinions contained in this Report, and the accuracy or completeness of any information included in this Report, are subject to the limitations expressed elsewhere in this Report; and
  - iv. except as expressly stated in this Report, URS makes no express or implied representations or warranties as to the professional advice included in this Report (including as to the completeness or accuracy of the information contained in this Report), all of which are hereby expressly negated and excluded;
- c) Whilst URS does not admit that any action, liability or claim may exist or be available to any Interested Party, this Report is only available to an Interested Party on the basis that subject to any law the terms of which cannot be excluded or modified by agreement:
- i. the maximum amount payable (if any) by URS to Interested Parties or any party claiming through an Interested Party in aggregate, whether in contract, tort or otherwise, in relation to claims, damages, liabilities, losses or expenses, under or in any way related to this Report or the services performed by URS to prepare the Report, shall be **A\$2,000,000**; and
  - ii. if there is more than one Interested Party, the maximum amount payable to any and all Interested Parties in total shall be **A\$2,000,000**, and

Except as specifically stated in this section, this Report may not be used by any third party.

URS has been retained to prepare this Report as an independent contractor of Mobil or an Affiliate and not as an agent of either of them. Neither Mobil nor an Affiliate is to be taken as making under any circumstances whatsoever or on any account whatsoever, any statement, representation, warranty or endorsement as to the adequacy or otherwise of the Report.

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Tables



**Table 1a**  
**Current Underground and Above Ground Storage Tanks**  
**Mobil Service Station Merimbula (NO1063)**

Tank ID	Product		Capacity (L)	Year Installed	Tank Type	Status	Construction	Date and Result of Last Integrity Test
	Current	Historical						
T1	-	ULP	22,000	unknown	UST	present	single walled	unknown
T2	-	PULP	27,000	unknown	UST	present	single walled	unknown
T3	-	ULP	10,000	unknown	UST	present	single walled	unknown
T4	-	Diesel	10,000	unknown	UST	present	single walled	unknown
T7	-	Water	2,000	unknown	UST	present	single walled	unknown

**Table 1b**  
**Former Underground and Above Ground Storage Tanks**  
**Mobil Service Station Merimbula (NO1063)**

Tank ID	Product	Capacity (L)	Year Installed	Tank Type	Status	Construction	Date and Reason for Decommissioning
T5	Diesel	10,000	unknown	UST	removed	single walled	unknown
T6	LPG	8,000	unknown	AST	removed	single walled	unknown

**Table 2**  
**Historical Site Use Summary**  
**Mobil Service Station Merimbula (NO1063)**

Date	Owner ID	Title Details	Information Source	Landuse / Activity	Buildings / Plant / Equipment	Earthworks	Adjacent Site Uses
prior to 1896	Crown		IT Environmental, 2005a - Historical Certificates of Title	Vacant	None	None	Unknown
1896-1920	Armstrong Lockhart Munn, manufacturer	Conveyance BK 577 No.915	IT Environmental, 2005a - Historical Certificates of Title	Unknown	Unknown	Unknown	Unknown
1920-1921	Randolph Cameron Munn, farmer	Conveyance BK 1185 No.324	IT Environmental, 2005a - Historical Certificates of Title	Unknown	Unknown	Unknown	Unknown
1921-1938	Joseph William Twofold, gentlemen	Conveyance BK 1245 No.865	IT Environmental, 2005a - Historical Certificates of Title	Unknown	Unknown	Unknown	Unknown
1938-1959	Willoughby Burnell Maunder, store keeper	Conveyance BK 1822 No.173 Aerial Photo Run 3 1940	IT Environmental, 2005a - Historical Aerial Photographs	Unknown	Sheds	Unknown	Roads to east and south, vacant land to the north and west
1959-1961	Vacuum Oil Company Proprietary Limited	Conveyance BK 2497 No.346	IT Environmental, 2005a - Historical Certificates of Title	Service station	one shed	Maybe some filling to level the Site during development	
1961-1988	Vacuum Oil Company Proprietary Limited	Certificate of Title Volume 8237 Folio 66 Aerial Photo Run 11, 22/10/1980	IT Environmental, 2005a - Historical Certificates of Title and Aerial Photographs	Service station	Petroleum storage and distribution equipment - USTs, ASTs and pipelines	Maybe some filling to level the Site during development	Properties to the north, south beyond Monaro Street and east across Market Street appear to be commercial.
1988-date	Vacuum Oil Company Proprietary Limited	Auto Consol 8237-66 Aerial Photo Run 11, 22/2/1998 Aerial Photo Run 8, 6/3/2005	IT Environmental, 2005a - Historical Certificates of Title and Aerial Photographs Site Visit	Disused service station	Petroleum storage and distribution equipment - USTs, ASTs and pipelines	None	Properties to the north, east and south are commercial. To the west are residential and commercial properties.

**Table 3**  
**Regional Hydrogeological Details**  
**Mobil Service Station Merimbula (NO1063)**

Aquifer	Aquifer Name and Type	Top of Aquifer (mbgs)	Base of Aquifer (mbgs)	Thickness (m)	TDS (mg/L)	Hydraulic Conductivity	Expected Flow Direction	Discharge Point and Distance
Regional		Approximately 1 to 5	Unknown	Unknown	<1,000	Based on sand aquifer, hydraulic conductivity is expected to be approximately 0.0173 to 17.28 m/day	East	Merimbula Lake

**Table 4**  
**Registered Groundwater Bore Search Results Summary**  
**Mobil Service Station Merimbula (NO1063)**

Bore ID	Public / Private	Use	Status	Direction From Site	Distance From Site	Topographically Downgradient	Screened Depth	Total Depth	SWL	TDS (mg/L)	Lithology
GW057654	Private	Domestic	Unknown	North West	500 m	No	Unknown	15	Unknown	Unknown	Unknown
GW040590	Private	Unknown	Unknown	South east	400 m	No	Unknown	5.5	Unknown	Unknown	Sand
GW065554	Private	Domestic	Unknown	South east	500 m	No	6.1-6.7	6.7	4.2	Unknown	Unknown
GW040589	Private	Unknown	Unknown	South east	500 m	No	Unknown	4.9	Unknown	Unknown	Sand
GW105858	Unknown	Domestic	Unknown	South east	500 m	No	Unknown	Unknown	Unknown	Unknown	Unknown
GW040591	Private	Unknown	Unknown	South east	500 m	No	Unknown	2.5	Unknown	Unknown	Sand
GW056187	Private	Domestic	Unknown	South east	600 m	No	Unknown	3.1	Unknown	Unknown	Sand

**Table 5**  
**Current and Historical Groundwater Quality Data – Field Parameters**  
**Mobil Service Station Merimbula (NO1063)**  
**21 May 2009**

Location	Date Measured	Total Well Depth (mTOC)	Top-of-Casing Elevation (mAHD)	Depth to Water (mTOC)	Depth to PSH (mTOC)	PSH Thickness (m)	Groundwater Elevation (mAHD)	Corrected Groundwater Elevation (mAHD)	Well Head Condition Summary
MW1	15-Sep-05	3.63	2.37	1.83	-	0.00	0.54	0.54	-
	21-May-09	4	2.37	1.79	-	0.00	0.59	0.59	OK
MW2	15-Sep-05	4.35	2.26	1.72	-	0.00	0.55	0.55	-
	21-May-09	4.06	2.26	1.67	-	0.00	0.59	0.59	OK
MW3	15-Sep-05	4.43	1.93	1.36	-	0.00	0.57	0.57	-
	21-May-09	4	1.93	1.29	-	0.00	0.65	0.65	OK
MW4	15-Sep-05	3.91	2.42	1.69	-	0.00	0.73	0.73	-
	21-May-09	3.9	2.42	1.55	-	0.00	0.87	0.87	OK
MW5	-	-	-	-	-	-	-	-	-
	21-May-09	4	2.02	1.26	-	0.00	0.76	0.76	OK
MW6	-	-	-	-	-	-	-	-	-
	21-May-09	4	2.26	1.54	-	0.00	0.72	0.72	OK
MW7	-	-	-	-	-	-	-	-	-
	21-May-09	4.01	2.38	1.70	-	0.00	0.68	0.68	OK

**Notes:**

Corrected groundwater elevation based on free product thickness multiplied by 0.78 shown

mAHD Metres above Australian Height Datum

mTOC Metres below top of casing

- Information not available

Table 6  
Groundwater Purging Details  
Mobil Service Station Merimbula (NO1063)  
21 May 2009

Location	Date Measured	Electrical Conductivity ( $\mu\text{S/cm}$ )	Estimated TDS# (mg/L)	Dissolved Oxygen (mg/L)	Field Redox Potential (mV)	Corrected Redox Potential^ (mV)	pH	Temperature ( $^{\circ}\text{C}$ )	Comments
MW1	15-Sep-05	961	625	1.4	-41	158.0	6.56	17.2	-
	21-May-09	881	573	2.86	-9.0	190.0	6.3	20.90	brown, turbid
MW2	15-Sep-05	427	278	1.57	-58	141.0	6.18	17.8	-
	21-May-09	485	315	3.13	25.0	224.0	6.0	21.2	brown, turbid
MW3	15-Sep-05	961	625	1	-41	158.0	7	17	-
	21-May-09	678	441	-	30	229.0	6	20	brown, turbid, no odour, dry after 22 L, dissolved oxygen not recorded
MW4	15-Sep-05	1201	781	4.62	-13	186.0	6.75	15.7	hydrocarbon sheen on water, well purged dry after 8 L
	21-May-09	747	486	3.67	-21.0	178.0	6.4	18.9	brown, turbid, purged dry after 10 L
MW5	15-Sep-05	-	-	-	-	-	-	-	-
	21-May-09	759	493	2.76	67.0	266.0	6.2	20.10	grey/black, turbid, hydrocarbon odour and slight sheen
MW6	15-Sep-05	-	-	-	-	-	-	-	-
	21-May-09	393	255	3.23	18.0	217.0	6.2	19.1	brown/black, turbid
MW7	15-Sep-05	-	-	-	-	-	-	-	-
	21-May-09	1337	869	3.51	-34	165.0	6.35	20.6	brown, turbid, purged dry after 5 L

**Notes:**

$\mu\text{S/cm}$  Microseimen per centimetre  
mg/L Milligrams per litre  
mV Millivolts  
 $^{\circ}\text{C}$  Degrees celsius  
# Estimated TDS based on electrical conductivity multiplied by 0.65  
^ Redox potential relative to the standard hydrogen electrode. ( $E_h = E_r + 199\text{mv}$ ).

**Table 7**  
**Soil Acceptance Criteria**  
**Mobil Service Station Merimbula (NO1063)**

Analyte	Units	LOR	NEPM HIL "D" <sup>1</sup>	NEPM HIL "F" <sup>2</sup>	NSW EPA Service Station Guidelines <sup>3</sup>	Adopted Soil Acceptance Criteria
<b>Total Petroleum Hydrocarbons</b>						
TPH (C <sub>8</sub> -C <sub>9</sub> Fraction)	mg/kg	10	-	-	65	65
Total TPH (C <sub>10</sub> -C <sub>36</sub> Fraction)	mg/kg	calc	-	-	1000	1000
<b>BTEX</b>						
Benzene	mg/kg	0.2	-	-	1	1
Toluene	mg/kg	0.5	-	-	1.4	1.4
Ethylbenzene	mg/kg	0.5	-	-	3.1	3.1
Xylenes - Total	mg/kg	calc	-	-	14	14
<b>Polycyclic Aromatic Hydrocarbon</b>						
Benzo(a)pyrene	mg/kg	0.5	1	5	1	1
Total PAHs	mg/kg	calc	20	100	20	20
<b>Phenols</b>						
Phenol	mg/kg	0.5	8500	42500	-	8500
<b>Metals</b>						
Arsenic	mg/kg	5	100	500	-	100
Barium	mg/kg	10	300	300	-	300
Cadmium	mg/kg	1	20	100	-	20
Chromium	mg/kg	2	12%	60%	-	12%
Copper	mg/kg	5	1000	5000	-	1000
Lead	mg/kg	5	300	1500	300	300
Mercury (inorganic)	mg/kg	0.1	15	75	-	15
Nickel	mg/kg	5	600	3000	-	600
Vanadium	mg/kg	5	50	50	-	50
Zinc	mg/kg	5	7000	35000	-	7000

Legend:

<sup>1</sup> = NEPM HIL 'D' - National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure, 1999 (NEPM) - Health-Based Investigation Level (HIL) Level D - residential with minimal opportunities for soil access

<sup>2</sup> = NEPM HIL 'F' - National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure, 1999 (NEPM) - Health-Based Investigation Level (HIL) Level F - commercial/industrial

<sup>3</sup> = NSW EPA Service Station Guideline - Guidelines for Assessing Service Station Sites (NSW EPA 1994), Threshold Concentrations for Sensitive Land Use - Soils

- = No Guideline

LOR = limit of reporting

mg/kg = milligrams per kilogram

calc= calculated



**Table 8**  
**Groundwater Acceptance Criteria**  
**Mobil Service Station Merimbula (NO1063)**

Analyte	Units	LOR	ADWG	ANZECC 2000	Adopted Groundwater Acceptance Criteria
<b>Total Petroleum Hydrocarbons</b>					
C6 - C9 Fraction	µg/L	20	-	-	-
C10 - C14 Fraction	µg/L	50	-	-	-
C15 - C28 Fraction	µg/L	100	-	-	-
C29 - C36 Fraction	µg/L	50	-	-	-
Total TPH C10-C36	µg/L	calc	-	-	-
<b>BTEX</b>					
Benzene	µg/L	1	1	700	1
Toluene	µg/L	2	800	180	180
Ethylbenzene	µg/L	2	300	5	5
meta- & para-Xylene	µg/L	2	-	-	-
ortho-Xylene	µg/L	2	-	350	350
Total Xylenes	µg/L	calc	600	-	600
<b>Polynuclear Aromatic Hydrocarbons</b>					
Naphthalene	µg/L	1	-	70	70
Acenaphthylene	µg/L	1	-	-	-
Acenaphthene	µg/L	1	-	-	-
Fluorene	µg/L	1	-	-	-
Phenanthrene	µg/L	1	-	2	2
Anthracene	µg/L	1	-	0.4*	0.4*
Fluoranthene	µg/L	1	-	1.4	1.4
Pyrene	µg/L	1	-	-	-
Benz(a)anthracene	µg/L	1	-	-	-
Chrysene	µg/L	1	-	-	-
Benzo(b)fluoranthene	µg/L	1	-	-	-
Benzo(k)fluoranthene	µg/L	1	-	-	-
Benzo(a)pyrene	µg/L	0.5	0.01*	0.2	0.01*
Indeno(1.2.3.cd)pyrene	µg/L	1	-	-	-
Dibenz(a,h)anthracene	µg/L	1	-	-	-
Benzo(g,h,i)perylene	µg/L	1	-	-	-
Total PAHs	µg/L	calc	-	-	-
<b>Phenolic Compounds</b>					
Phenol	µg/L	1	-	400	400
2-Chlorophenol	µg/L	1	300	340	300
2-Methylphenol	µg/L	1	-	-	-
3- & 4-Methylphenol	µg/L	2	-	-	-
2-Nitrophenol	µg/L	1	-	2	2
2,4-Dimethylphenol	µg/L	1	-	2	2
2,4-Dichlorophenol	µg/L	1	200	120	120
2,6-Dichlorophenol	µg/L	1	-	34	34
4-Chloro-3-Methylphenol	µg/L	1	-	-	-
2,4,6-Trichlorophenol	µg/L	1	20	3	3
2,4,5-Trichlorophenol	µg/L	1	-	4	4
Pentachlorophenol	µg/L	2	-	22	22
<b>Metals</b>					
Arsenic	mg/L	0.001	0.007	0.0068	0.0068
Barium	mg/L	0.001	0.7	-	0.7
Cadmium	mg/L	0.0001	0.002	0.0055	0.002
Chromium	mg/L	0.001	0.05	0.032	0.032
Copper	mg/L	0.001	2	0.0013	0.0013
Lead	mg/L	0.001	0.01	0.0044	0.0044
Mercury (inorganic)	mg/L	0.0001	0.001	0.0004	0.0004
Nickel	mg/L	0.001	0.02	0.07	0.02
Vanadium	mg/L	0.01	-	0.1	0.1
Zinc	mg/L	0.005	3	0.015	0.015

**Table 8**  
**Groundwater Acceptance Criteria**  
**Mobil Service Station Merimbula (NO1063)**

Analyte	Units	LOR	ADWG	ANZECC 2000	Adopted Groundwater Acceptance Criteria
<b>Fumigants</b>					
2,2-Dichloropropane	µg/L	5	-	-	-
1,2-Dichloropropane	µg/L	5	-	900	900
cis-1,3-Dichloropropylene	µg/L	5	-	1100	1100
trans-1,3-Dichloropropylene	µg/L	5	-		
1,2-Dibromoethane (EDB)	µg/L	5	-	-	-
<b>Halogenated Aliphatic Compounds</b>					
Dichlorodifluoromethane	µg/L	50	-	-	-
Chloromethane	µg/L	50	-	-	-
Vinyl chloride	µg/L	50	0.3*	-	0.3*
Bromomethane	µg/L	50	-	-	-
Chloroethane	µg/L	50	-	-	-
Trichlorofluoromethane	µg/L	50	-	-	-
1,1-Dichloroethene	µg/L	5	30	700	30
Iodomethane	µg/L	5	-	-	-
trans-1,2-Dichloroethene	µg/L	5	0.06*	-	0.06*
1,1-Dichloroethane	µg/L	5	-	250	250
cis-1,2-Dichloroethene	µg/L	5	0.06*	-	0.06*
1,1,1-Trichloroethane	µg/L	5	-	270	270
1,1-Dichloropropylene	µg/L	5	-	-	-
Carbon Tetrachloride	µg/L	5	3*	240	3*
1,2-Dichloroethane	µg/L	5	3*	1900	3*
Trichloroethene	µg/L	5	-	-	-
Dibromomethane	µg/L	5	-	-	-
1,1,2-Trichloroethane	µg/L	5	-	1900	1900
1,3-Dichloropropane	µg/L	5	-	1100	1100
Tetrachloroethene	µg/L	5	50	-	50
1,1,1,2-Tetrachloroethane	µg/L	5	-	-	-
trans-1,4-Dichloro-2-butene	µg/L	5	-	-	-
cis-1,4-Dichloro-2-butene	µg/L	5	-	-	-
1,1,2,2-Tetrachloroethane	µg/L	5	-	400	400
1,2,3-Trichloropropane	µg/L	5	-	-	-
Pentachloroethane	µg/L	5	-	80	80
1,2-Dibromo-3-chloropropane	µg/L	5	-	-	-
Hexachlorobutadiene	µg/L	5	-	-	-
<b>Halogenated Aromatic Compounds</b>					
Chlorobenzene	µg/L	5	300	55	55
Bromobenzene	µg/L	5	-	-	-
2-Chlorotoluene	µg/L	5	-	-	-
4-Chlorotoluene	µg/L	5	-	-	-
1,3-Dichlorobenzene	µg/L	5	-	260	260
1,4-Dichlorobenzene	µg/L	5	-	60	60
1,2-Dichlorobenzene	µg/L	5	-	160	160
1,2,4-Trichlorobenzene	µg/L	5	-	80	80
1,2,3-Trichlorobenzene	µg/L	5	-	3*	3*
<b>Trihalomethanes</b>					
Chloroform	µg/L	5	-	370	370
Bromodichloromethane	µg/L	5	-	-	-
Dibromochloromethane	µg/L	5	-	-	-
Bromoform	µg/L	5	-	-	-

**Legend:**

Australian Drinking Water Guidelines - Health Guideline values

ANZECC/ARMCANZ 2000 Trigger values for marine ecosystems - Level of protection 95% species

mg/L = milligrams per litre

- = No Guideline

µg/L = micrograms per litre

LOR = Limit of Reporting

calc = calculated concentration therefore no LOR is available

\* = LOR is greater than adopted guideline

Table 9a  
Soil Analytical Results - TPH, BTEX and Lead  
Mobil Service Station Merimbula (NO1063)  
13 May 2009

Location
Sample ID
Sample Date
Sample Type
PID Reading (ppm)

MW5			MW6			MW7	
MW5 0.5-0.6	QC100 13/05/09	QC200	MW5 1.0-1.2	MW6 0.2-0.3	MW6 1.0-1.2	MW7 0.5-0.6	MW7 1.0-1.2
13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009
PS	FD	FT	PS	PS	PS	PS	PS
0.6			6.4	0.2	0.1	14.6	0.4

Analyte	Units	LOR	Adopted Soil Acceptance Criteria								
Total Petroleum Hydrocarbons											
C6 - C9 Fraction	mg/kg	10	65	<10	<10	<5	<10	<10	<10	<10	<10
C10 - C14 Fraction	mg/kg	50	-	<50	<50	<10	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	100	-	<100	<100	20	<100	<100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100	-	<100	<100	<20	<100	<100	<100	<100	<100
Total TPH C10-C36	mg/kg	calc	1000	ND	ND	20	ND	ND	ND	ND	ND
BTEX											
Benzene	mg/kg	0.2	1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	1.4	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	3.1	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	0.5	-	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Total xylene	mg/kg	calc	14	ND	ND	<3	ND	ND	ND	ND	ND
Metals											
Lead	mg/kg	5	1500	9	6	8.3	<5	205	<5	203	<5
Moisture Content											
Moisture Content (dried @ 103°C)	%	1	-	12.1	12.1	21	13.5	22.5	12.5	18.4	7.6

Legend:

Exceeds the adopted acceptance criteria (Table 7)

mg/kg = milligrams per kilogram  
LOR = limit of reporting  
- = no adopted SAC available  
ND = not detected  
calc = calculated

ppm = parts per million  
PS = primary sample  
FD = field duplicate  
FT = field triplicate  
-- = not analysed

**Table 9b**  
**Soil Analytical Results - PAHs and Phenols**  
**Mobil Service Station Merimbula (NO1063)**  
**13 May 2009**

Location
Sample ID
Sample Date
Sample Type
PID Reading (ppm)

MW5				MW6			MW7	
MW5 0.5-0.6	QC100 13/05/09	QC200	MW5 1.0-1.2	MW6 0.2-0.3	MW6 1.0-1.2	MW7 0.5-0.6	MW7 1.0-1.2	
13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	
PS	FD	FT	PS	PS	PS	PS	PS	
0.6			6.4	0.2	0.1	14.6	0.4	

Analyte	Units	LOR	Adopted Soil Acceptance Criteria								
Polynuclear Aromatic Hydrocarbons											
Naphthalene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5	-	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3,cd)pyrene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total PAHs	mg/kg	calc	20	ND	ND	ND	ND	ND	ND	ND	ND
Phenolic Compounds											
Phenol	mg/kg	0.5	8500	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	mg/kg	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Nitrophenol	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	mg/kg	2	-	<2.0	<2.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0

**Legend:**

Exceeds the adopted acceptance criteria (Table 7)

mg/kg = milligrams per kilogram      ppm = parts per million  
LOR = limit of reporting      PS = primary sample  
- = no adopted SAC available      FD = field duplicate  
ND = not detected      FT = field triplicate  
calc = calculated      --- = not analysed

**Table 9c**  
**Soil Analytical Results - Metals and VCHs**  
**Mobil Service Station Merimbula (NO1063)**  
**13 May 2009**

Location
Sample ID
Sample Date
Sample Type
PID Reading (ppm)

MW5				MW6		MW7	
MW5 0.5-0.6	QC100 13/05/09	QC200	MW5 1.0-1.2	MW6 0.2-0.3	MW6 1.0-1.2	MW7 0.5-0.6	MW7 1.0-1.2
13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009
PS	FD	FT	PS	PS	PS	PS	PS
0.6			6.4	0.2	0.1	14.6	0.4

Analyte	Units	LOR	Adopted Soil Acceptance Criteria								
Metals											
Arsenic	mg/kg	5	100	<5	<5	<2	<5	<5	<5	<5	<5
Barium	mg/kg	10	300	10	10	10	<10	90	<10	120	10
Cadmium	mg/kg	1	20	<1	<1	<2	<1	1	<1	1	<1
Chromium	mg/kg	2	12%	<2	<2	<2	<2	14	<2	8	3
Copper	mg/kg	5	1000	<5	<5	<2	<5	69	<5	40	<5
Lead	mg/kg	5	300	9	6	8.3	<5	205	<5	203	<5
Mercury	mg/kg	0.1	15	<0.1	<0.1	0.01	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	2	600	<2	<2	<2	<2	14	<2	4	<2
Vanadium	mg/kg	5	50	<5	<5	<2	<5	<5	<5	8	<5
Zinc	mg/kg	5	7000	26	19	25	<5	452	<5	266	8
Fumigants											
2,2-Dichloropropane	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dibromoethane (EDB)	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Halogenated Aliphatic Compounds											
Dichlorodifluoromethane	mg/kg	5	-	<5	<5	—	<5	<5	<5	<5	<5
Chloromethane	mg/kg	5	-	<5	<5	—	<5	<5	<5	<5	<5
Vinyl chloride	mg/kg	5	-	<5	<5	<1	<5	<5	<5	<5	<5
Bromomethane	mg/kg	5	-	<5	<5	—	<5	<5	<5	<5	<5
Chloroethane	mg/kg	5	-	<5	<5	<1	<5	<5	<5	<5	<5
Trichlorofluoromethane	mg/kg	5	-	<5	<5	<1	<5	<5	<5	<5	<5
1,1-Dichloroethene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Iodomethane	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloropropylene	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,4-Dichloro-2-butene	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,4-Dichloro-2-butene	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5

**Table 9c**  
**Soil Analytical Results - Metals and VCHs**  
**Mobil Service Station Merimbula (NO1063)**  
**13 May 2009**

Location	MW5				MW6		MW7			
Sample ID	MW5 0.5-0.6	QC100 13/05/09	QC200	MW5 1.0-1.2	MW6 0.2-0.3	MW6 1.0-1.2	MW7 0.5-0.6	MW7 1.0-1.2		
Sample Date	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009	13/05/2009		
Sample Type	PS	FD	FT	PS	PS	PS	PS	PS		
PID Reading (ppm)	0.6			6.4	0.2	0.1	14.6	0.4		

Analyte	Units	LOR	Adopted Soil Acceptance Criteria								
1,2,3-Trichloropropane	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachloroethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dibromo-3-chloropropane	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
<b>Halogenated Aromatic Compounds</b>											
Chlorobenzene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	mg/kg	0.5	-	<0.5	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorotoluene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chlorotoluene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichlorobenzene	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
<b>Trihalomethanes</b>											
Chloroform	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	mg/kg	0.5	-	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5

**Legend:**

Exceeds the adopted acceptance criteria (Table 7)

mg/kg = milligrams per kilogram

LOR = limit of reporting

- = no adopted SAC available

ND = not detected

calc = calculated

ppm = parts per million

PS = primary sample

FD = field duplicate

FT = field triplicate

— = not analysed

**Table 10a**  
**Groundwater Analytical Results - TPH, BTEX and Lead**  
**Mobil Service Station Merimbula (NO1063)**  
**21 May 2009**

<b>Sample ID</b>
<b>Sample Date</b>
<b>Sample Type</b>

MW1	MW2	MW3	MW4	MW5	QC100	QC200	MW6	MW7
21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009
PS	PS	PS	PS	PS	FD	FT	PS	PS

Analyte	Units	LOR	Adopted Groundwater Acceptance Criteria									
Total Petroleum Hydrocarbons												
C6 - C9 Fraction	µg/L	20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	µg/L	50	-	<50	<50	<50	60	<50	<50	88	<50	260
C15 - C28 Fraction	µg/L	100	-	800	200	300	600	200	200	303	400	2400
C29 - C36 Fraction	µg/L	50	-	200	<50	<50	140	140	130	<100	140	450
Total TPH C10-C36	µg/L	calc	-	1000	200	300	800	340	330	391	540	3110
BTEX												
Benzene	µg/L	1	1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1
Toluene	µg/L	2	180	<5	<5	<5	<5	<5	<5	<1	<5	<5
Ethylbenzene	µg/L	2	5	<2	<2	<2	<2	<2	<2	<1	<2	10
meta- & para-Xylene	µg/L	2	-	<2	<2	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	µg/L	2	350	<2	<2	<2	<2	<2	<2	<1	<2	<2
Total xylenes	µg/L	calc	600	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals												
Lead	mg/L	0.001	0.0044	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001

Legend:

Exceeds the adopted acceptance criteria (Table 8)

mg/L = milligrams per litre PS = primary sample

µg/L = micrograms per litre FD = field duplicate

LOR = Limit of Reporting FT = field triplicate

calc = calculated concentration therefore no ND = Not Detected

\* = LOR is greater than adopted guideline - = no GAC available

**Table 10b**  
**Groundwater Analytical Results - PAHs and Phenols**  
**Mobil Service Station Merimbula (NO1063)**  
**21 May 2009**

<b>Sample ID</b>
<b>Sample Date</b>
<b>Sample Type</b>

MW1	MW2	MW3	MW4	MW5	QC100	QC200	MW6	MW7
21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009
PS	PS	PS	PS	PS	FD	FT	PS	PS

Analyte	Units	LOR	Adopted Groundwater Acceptance Criteria									
<b>Polynuclear Aromatic Hydrocarbons</b>												
Naphthalene	µg/L	1	70	<1.0	<1.0	<1.0	1.4	2.6	1.8	<1.0	1.2	4.2
Acenaphthylene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L	1	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L	1	0.4*	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L	1	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
Benzo(k)fluoranthene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L	0.5	0.01*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total PAHs	µg/L	calc	-	ND	ND	ND	1.4	2.6	1.8	ND	1.2	4.2
<b>Phenolic Compounds</b>												
Phenol	µg/L	1	400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0
2-Chlorophenol	µg/L	1	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0
2-Methylphenol	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0
3- & 4-Methylphenol	µg/L	2	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<2.0	<2.0
2-Nitrophenol	µg/L	1	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	—	<1.0	<1.0
2,4-Dimethylphenol	µg/L	1	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	—	<1.0	<1.0
2,4-Dichlorophenol	µg/L	1	120	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	—	<1.0	<1.0
2,6-Dichlorophenol	µg/L	1	34	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L	1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	1	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L	1	4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	—	<1.0	<1.0
Pentachlorophenol	µg/L	2	22	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<30	<2.0	<2.0

Legend:

Exceeds the adopted acceptance criteria (Table 8)

mg/L = milligrams per litre PS = primary sample

µg/L = micrograms per litre FD = field duplicate

LOR = Limit of Reporting FT = field triplicate

calc = calculated concentration therefore no ND = Not Detected

\* = LOR is greater than adopted guideline - = no GAC available



Table 10c  
Groundwater Analytical Results - Metals and VCHs  
Mobil Service Station Merimbula (NO1063)  
21 May 2009

Sample ID
Sample Date
Sample Type

MW1	MW2	MW3	MW4	MW5	QC100	QC200	MW6	MW7
21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009
PS	PS	PS	PS	PS	FD	FT	PS	PS

Analyte	Units	LOR	Adopted Groundwater Acceptance Criteria									
Metals												
Arsenic	mg/L	0.001	0.0068	0.028	0.009	0.014	0.023	0.003	0.003	<0.005	0.01	0.002
Barium	mg/L	0.001	0.7	0.054	0.015	0.022	0.028	0.015	0.014	0.015	0.014	0.019
Cadmium	mg/L	0.0001	0.002	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.005	<0.0001	<0.0001
Chromium	mg/L	0.001	0.032	0.002	0.005	0.005	0.003	0.002	0.002	<0.005	0.006	<0.005
Copper	mg/L	0.001	0.0013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001
Lead	mg/L	0.001	0.0044	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001
Mercury	mg/L	0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.001	0.02	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.005	<0.001	0.001
Vanadium	mg/L	0.01	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	0.02	<0.01
Zinc	mg/L	0.005	0.015	0.016	0.014	0.218	0.67	0.012	0.015	0.012	0.022	0.026
Fumigants												
2,2-Dichloropropane	µg/L	5	-	<5	<5	<5	<5	<5	<5	---	<5	<5
1,2-Dichloropropane	µg/L	5	900	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	µg/L	5	1100	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	µg/L	5		<5	<5	<5	<5	<5	<5	<5	<5	<5
Halogenated Aliphatic Compounds												
Dichlorodifluoromethane	µg/L	50	-	<50	<50	<50	<50	<50	<50	---	<50	<50
Chloromethane	µg/L	50	-	<50	<50	<50	<50	<50	<50	---	<50	<50
Vinyl chloride	µg/L	50	0.3*	<50	<50	<50	<50	<50	<50	<5	<50	<50
Bromomethane	µg/L	50	-	<50	<50	<50	<50	<50	<50	---	<50	<50
Chloroethane	µg/L	50	-	<50	<50	<50	<50	<50	<50	<5	<50	<50
Trichlorofluoromethane	µg/L	50	-	<50	<50	<50	<50	<50	<50	<5	<50	<50
1,1-Dichloroethene	µg/L	5	30	<5	<5	<5	<5	<5	<5	<5	<5	<5
Iodomethane	µg/L	5	-	<5	<5	<5	<5	<5	<5	---	<5	<5
trans-1,2-Dichloroethene	µg/L	5	0.06*	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	µg/L	5	250	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L	5	0.06*	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L	5	270	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloropropylene	µg/L	5	-	<5	<5	<5	<5	<5	<5	---	<5	<5
Carbon Tetrachloride	µg/L	5	3*	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	µg/L	5	3*	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	5	1900	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,3-Dichloropropane	µg/L	5	1100	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	µg/L	5	50	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L	5	-	<5	<5	<5	<5	<5	<5	---	<5	<5
trans-1,4-Dichloro-2-butene	µg/L	5	-	<5	<5	<5	<5	<5	<5	---	<5	<5
cis-1,4-Dichloro-2-butene	µg/L	5	-	<5	<5	<5	<5	<5	<5	---	<5	<5

Table 10c  
Groundwater Analytical Results - Metals and VCHs  
Mobil Service Station Merimbula (NO1063)  
21 May 2009

Sample ID
Sample Date
Sample Type

MW1	MW2	MW3	MW4	MW5	QC100	QC200	MW6	MW7
21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009	21/05/2009
PS	PS	PS	PS	PS	FD	FT	PS	PS

Analyte	Units	LOR	Adopted Groundwater Acceptance Criteria									
1.1.2.2-Tetrachloroethane	µg/L	5	400	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.2.3-Trichloropropane	µg/L	5	-	<5	<5	<5	<5	<5	<5	—	<5	<5
Pentachloroethane	µg/L	5	80	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	µg/L	5	-	<5	<5	<5	<5	<5	<5	—	<5	<5
Hexachlorobutadiene	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>												
Chlorobenzene	µg/L	5	55	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromobenzene	µg/L	5	-	<5	<5	<5	<5	<5	<5	—	<5	<5
2-Chlorotoluene	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
4-Chlorotoluene	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.3-Dichlorobenzene	µg/L	5	260	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.4-Dichlorobenzene	µg/L	5	60	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.2-Dichlorobenzene	µg/L	5	160	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	µg/L	5	80	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	µg/L	5	3*	<5	<5	<5	<5	<5	<5	<5	<5	<5
<b>Trihalomethanes</b>												
Chloroform	µg/L	5	370	<5	<5	<5	<5	<5	<5	<10	<5	<5
Bromodichloromethane	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	µg/L	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5

Legend:

Exceeds the adopted acceptance criteria (Table 8)

mg/L = milligrams per litre PS = primary sample  
µg/L = micrograms per litre FD = field duplicate  
LOR = Limit of Reporting FT = field triplicate  
calc = calculated concentration therefore no ND = Not Detected  
\* = LOR is greater than adopted guideline - = no GAC available

**Table 11a**  
**Solid Quality Control Sample Analytical Results**  
**Mobil Service Station Merimbula (NO1063)**

Sample ID	TRIPBLANK_14/05/09
Sample Date	14/05/2009
Sample Type	Trip Blank

Analyte	Units	LOR
<b>Total Petroleum Hydrocarbons</b>		
C6 - C9 Fraction	mg/kg	10
C10 - C14 Fraction	mg/kg	50
C15 - C28 Fraction	mg/kg	100
C29 - C36 Fraction	mg/kg	100
Total TPH C10-C36	mg/kg	calc
<b>BTEX</b>		
Benzene	mg/kg	0.2
Toluene	mg/kg	0.5
Ethylbenzene	mg/kg	0.5
meta- & para-Xylene	mg/kg	0.5
ortho-Xylene	mg/kg	0.5
Total xylene	mg/kg	calc

Legend:  
mg/kg = milligrams per kilogram  
LOR = limit of reporting  
calc = calculated

**Table 11b**  
**Liquid Quality Control Sample Analytical Results**  
**Mobil Service Station Merimbula (NO1063)**

Sample ID	QC300 14/05/09	QC400 14/05/09	QCR1 21/05/09	QCF1 21/05/09	QCTB 21/05/09
Sample Date	14/05/2009	14/05/2009	21/05/2009	21/05/2009	13/05/2009
Sample Type	Rinsate Blank	Field Blank	Rinsate Blank	Field Blank	Trip Blank

Analyte	Units	LOR					
<b>Total Petroleum Hydrocarbons</b>							
C6 - C9 Fraction	µg/L	20	<20	<20	<20	<20	<20
C10 - C14 Fraction	µg/L	50	<50	<50	160	100	—
C15 - C28 Fraction	µg/L	100	<100	<100	100	200	—
C29 - C36 Fraction	µg/L	50	<50	<50	<50	<50	—
Total TPH C10-C36	µg/L	calc	ND	ND	260	300	—
<b>BTEX</b>							
Benzene	µg/L	1	<1	<1	<1	<1	<1
Toluene	µg/L	2	<5	<5	<5	<5	<5
Ethylbenzene	µg/L	2	<2	<2	<2	<2	<2
meta- & para-Xylene	µg/L	2	<2	<2	<2	<2	<2
ortho-Xylene	µg/L	2	<2	<2	<2	<2	<2
Total xylenes	µg/L	calc	ND	ND	ND	ND	ND
<b>Fumigants</b>							
2,2-Dichloropropane	µg/L	5	<5	<5	<5	<5	—
1,2-Dichloropropane	µg/L	5	<5	<5	<5	<5	—
cis-1,3-Dichloropropylene	µg/L	5	<5	<5	<5	<5	—
trans-1,3-Dichloropropylene	µg/L	5	<5	<5	<5	<5	—
1,2-Dibromoethane (EDB)	µg/L	5	<5	<5	—	—	—
<b>Halogenated Aliphatic Compounds</b>							
Dichlorodifluoromethane	µg/L	50	<50	<50	<50	<50	—
Chloromethane	µg/L	50	<50	<50	<50	<50	—
Vinyl chloride	µg/L	50	<50	<50	<50	<50	—
Bromomethane	µg/L	50	<50	<50	<50	<50	—
Chloroethane	µg/L	50	<50	<50	<50	<50	—
Trichlorofluoromethane	µg/L	50	<50	<50	<50	<50	—
1,1-Dichloroethene	µg/L	5	<5	<5	<5	<5	—
Iodomethane	µg/L	5	<5	<5	<5	<5	—
trans-1,2-Dichloroethene	µg/L	5	<5	<5	<5	<5	—
1,1-Dichloroethane	µg/L	5	<5	<5	<5	<5	—
cis-1,2-Dichloroethene	µg/L	5	<5	<5	<5	<5	—
1,1,1-Trichloroethane	µg/L	5	<5	<5	<5	<5	—
1,1-Dichloropropylene	µg/L	5	<5	<5	<5	<5	—
Carbon Tetrachloride	µg/L	5	<5	<5	<5	<5	—
1,2-Dichloroethane	µg/L	5	<5	<5	<5	<5	—
Trichloroethene	µg/L	5	<5	<5	<5	<5	—
Dibromomethane	µg/L	5	<5	<5	<5	<5	—
1,1,2-Trichloroethane	µg/L	5	<5	<5	<5	<5	—
1,3-Dichloropropane	µg/L	5	<5	<5	<5	<5	—
Tetrachloroethene	µg/L	5	<5	<5	<5	<5	—
1,1,1,2-Tetrachloroethane	µg/L	5	<5	<5	<5	<5	—
trans-1,4-Dichloro-2-butene	µg/L	5	<5	<5	<5	<5	—
cis-1,4-Dichloro-2-butene	µg/L	5	<5	<5	<5	<5	—
1,1,2,2-Tetrachloroethane	µg/L	5	<5	<5	<5	<5	—
1,2,3-Trichloropropane	µg/L	5	<5	<5	<5	<5	—
Pentachloroethane	µg/L	5	<5	<5	<5	<5	—
1,2-Dibromo-3-chloropropane	µg/L	5	<5	<5	<5	<5	—
Hexachlorobutadiene	µg/L	5	<5	<5	<5	<5	—
<b>Halogenated Aromatic Compounds</b>							
Chlorobenzene	µg/L	5	<5	<5	<5	<5	—
Bromobenzene	µg/L	5	<5	<5	<5	<5	—
2-Chlorotoluene	µg/L	5	<5	<5	<5	<5	—
4-Chlorotoluene	µg/L	5	<5	<5	<5	<5	—
1,3-Dichlorobenzene	µg/L	5	<5	<5	<5	<5	—
1,4-Dichlorobenzene	µg/L	5	<5	<5	<5	<5	—
1,2-Dichlorobenzene	µg/L	5	<5	<5	<5	<5	—
1,2,4-Trichlorobenzene	µg/L	5	<5	<5	<5	<5	—
1,2,3-Trichlorobenzene	µg/L	5	<5	<5	<5	<5	—

**Table 11b**  
**Liquid Quality Control Sample Analytical Results**  
**Mobil Service Station Merimbula (NO1063)**

<b>Sample ID</b>	QC300 14/05/09	QC400 14/05/09	QCR1 21/05/09	QCF1 21/05/09	QCTB 21/05/09
<b>Sample Date</b>	14/05/2009	14/05/2009	21/05/2009	21/05/2009	13/05/2009
<b>Sample Type</b>	Rinsate Blank	Field Blank	Rinsate Blank	Field Blank	Trip Blank

Analyte	Units	LOR					
<b>Trihalomethanes</b>							
Chloroform	µg/L	5	<5	<5	<5	<5	—
Bromodichloromethane	µg/L	5	<5	<5	<5	<5	—
Dibromochloromethane	µg/L	5	<5	<5	<5	<5	—
Bromoform	µg/L	5	<5	<5	<5	<5	—
<b>Phenolic Compounds</b>							
Phenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
2-Chlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
2-Methylphenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
3- & 4-Methylphenol	µg/L	2	<2.0	<2.0	<2.0	<2.0	—
2-Nitrophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
2,4-Dimethylphenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
2,4-Dichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
2,6-Dichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
4-Chloro-3-Methylphenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
2,4,6-Trichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
2,4,5-Trichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Pentachlorophenol	µg/L	2	<2.0	<2.0	<2.0	<2.0	—
<b>Polynuclear Aromatic Hydrocarbons</b>							
Naphthalene	µg/L	1	<1.0	<1.0	3.6	2.3	—
Acenaphthylene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Acenaphthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Fluorene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Phenanthrene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Anthracene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Fluoranthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Pyrene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Benz(a)anthracene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Chrysene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Benzo(b)fluoranthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Benzo(k)fluoranthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Benzo(a)pyrene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	—
Indeno(1,2,3,cd)pyrene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Dibenz(a,h)anthracene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Benzo(g,h,i)perylene	µg/L	1	<1.0	<1.0	<1.0	<1.0	—
Total PAHs	µg/L	calc	ND	ND	3.6	2.3	—
<b>Metals</b>							
Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	—
Barium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	—
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	—
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	—
Copper	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	—
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	—
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	—
Nickel	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	—
Vanadium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	—
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	—

Legend:

mg/L = milligrams per litre

µg/L = micrograms per litre

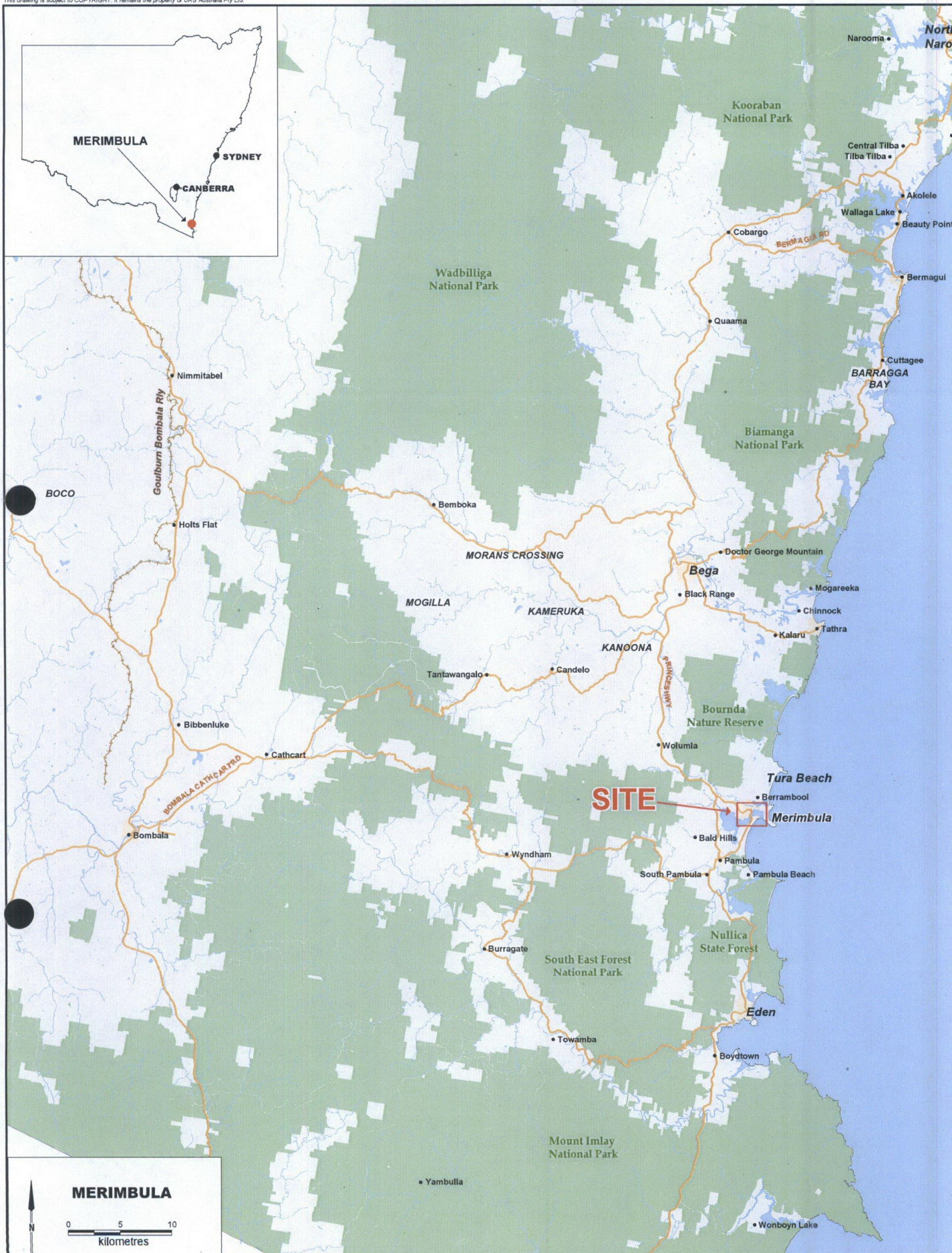
LOR = Limit of Reporting

calc = calculated concentration therefore no LOR is available


ND = Not Detected

Figures






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Client MOBIL OIL AUSTRALIA PTY LTD	Project MOBIL SERVICE STATION PP2 ESA 27 MARKET STREET MERIMBULA, NSW	Title GENERAL AREA MAP
	Drawn: AO    Approved: TO    Date: 15/06/2009 Job No: 42424195    File No: 42424195.002.wor	Figure: 1

















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Client MOBIL OIL AUSTRALIA PTY LTD	Project MOBIL SERVICE STATION PP2 ESA 27 MARKET STREET MERIMBULA, NSW	Title SITE LOCATION MAP
	Drawn: AO Approved: TO Date: 15/06/2009 Job No: 42424195 File No: 42424195.001.wor	Figure: 2





**LEGEND:**

-  Monitoring Well Location (IT Environmental)
-  Monitoring Well Location (URS)
-  Soil Bore Location
-  Electricity
-  Overhead Electricity Cable
-  Sewer
-  Telstra
-  Underground Telstra Cable
-  Water
-  Groundwater Flow Direction
-  Underground Storage Tanks
-  Site Boundary

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Drawn: AO	Approved: TO	Date: 17/06/2009
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Job No.: 42424195	File No.: 42424195.003.mxd
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Client

MOBIL OIL AUSTRALIA  
PTY LTD

Project

MOBIL SERVICE STATION PP2 ESA  
27 MARKET STREET MERIMBULA, NSW

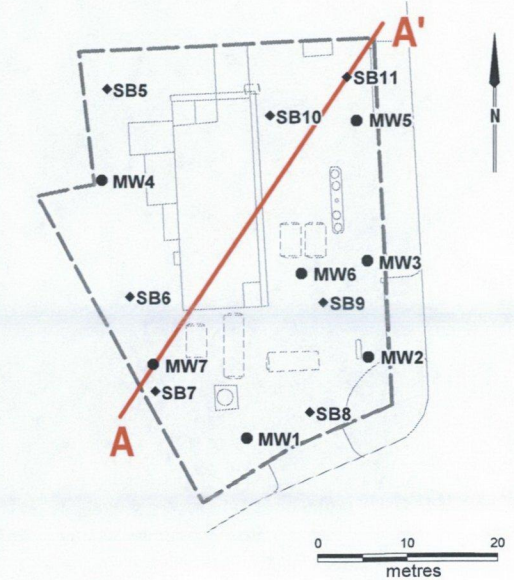
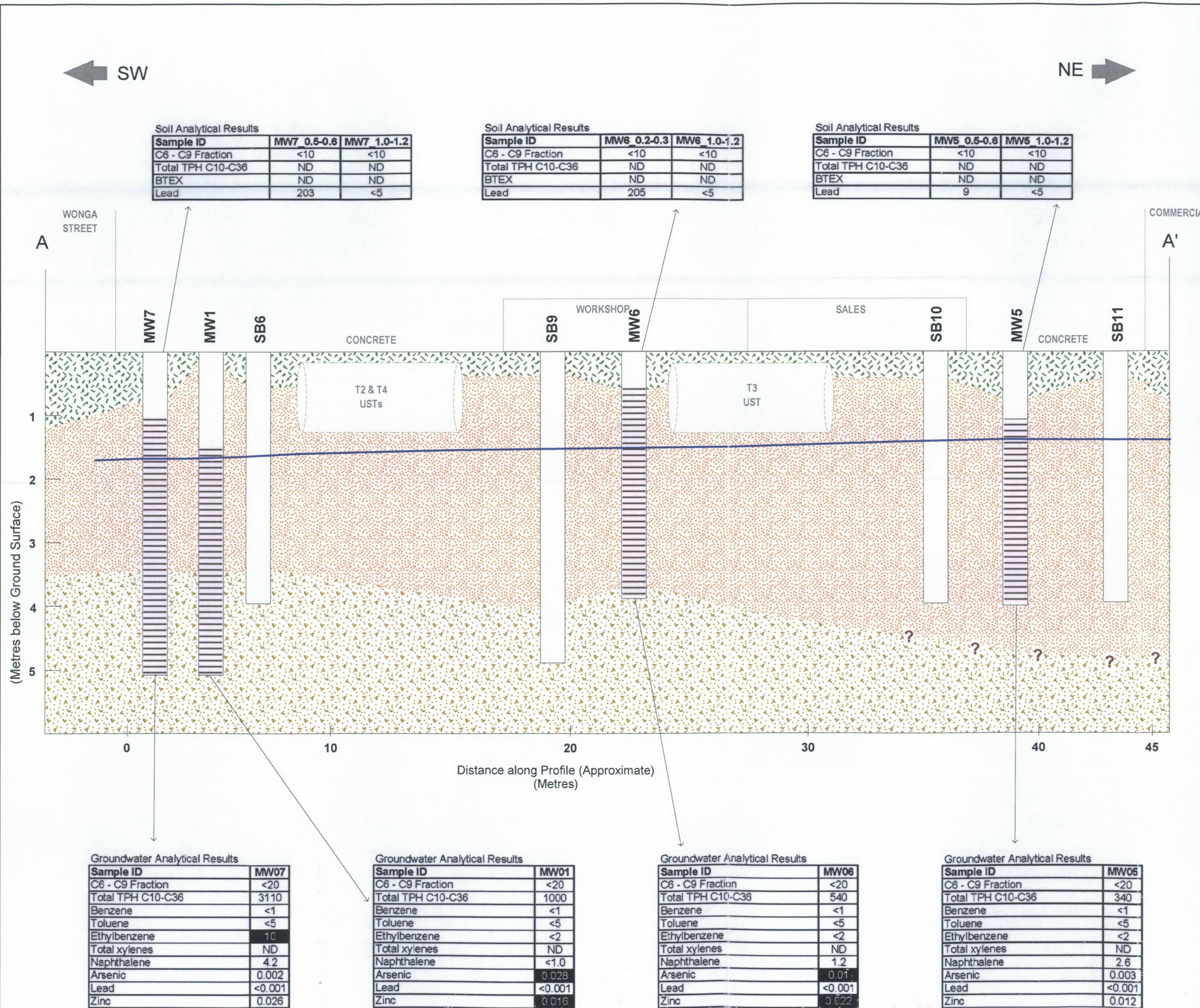
Title

DETAILED SITE  
LAYOUT PLAN

Figure: 3







Legend:

- Fill
- Sand
- Clay
- Standing Water Level

Legend:

Exceeds the adopted acceptance criteria

All soil concentrations in mg/kg

Metals concentrations in groundwater in mg/L

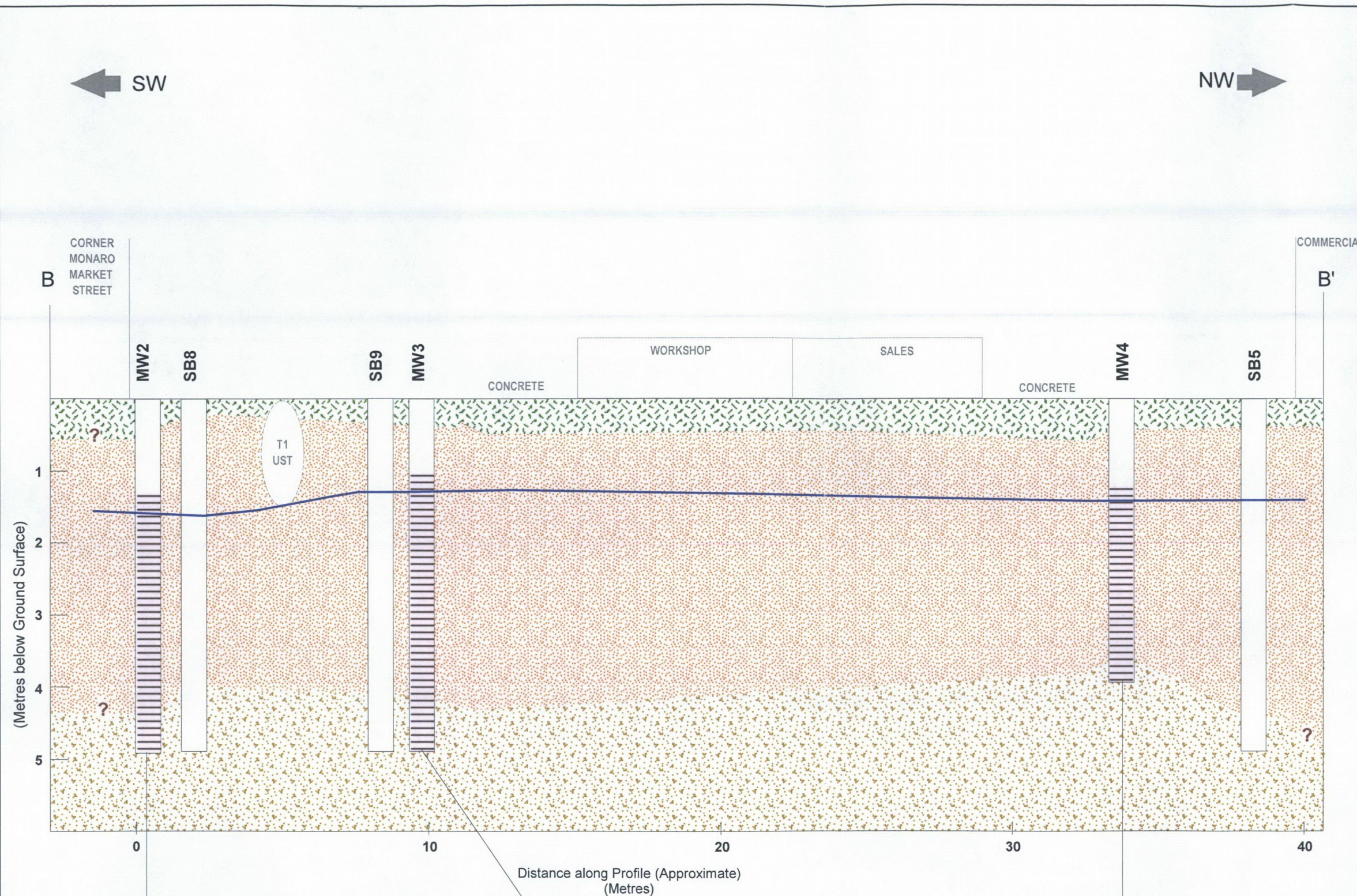
Organics concentrations in groundwater in µg/L

ND = not detected

THIS IS ONE INTERPRETATION ONLY  
OTHER INTERPRETATIONS ARE POSSIBLE

Drawn: AO	Approved: TO	Date: 17/06/2009
Job No: 42424195	File: 42424195.005.wor	
Client  MOBIL OIL AUSTRALIA PTY LTD		
Project  MOBIL SERVICE STATION PP2 ESA 27 MARKET STREET MERIMBULA, NSW		
Title  GEOLOGICAL CROSS SECTION A-A'		
Figure: 4a		
URS		

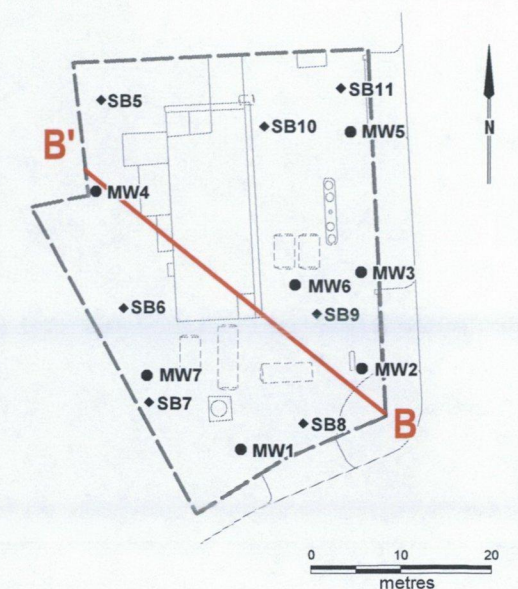




Groundwater Analytical Results	
Sample ID	MW02
C6 - C9 Fraction	<20
Total TPH C10-C36	200
Benzene	<1
Toluene	<5
Ethylbenzene	<2
Total xylenes	ND
Naphthalene	<1.0
Arsenic	0.009
Lead	<0.001
Zinc	0.014

Groundwater Analytical Results	
Sample ID	MW03
C6 - C9 Fraction	<20
Total TPH C10-C36	300
Benzene	<1
Toluene	<5
Ethylbenzene	<2
Total xylenes	ND
Naphthalene	<1.0
Arsenic	0.014
Lead	<0.001
Zinc	0.218

Groundwater Analytical Results	
Sample ID	MW04
C6 - C9 Fraction	<20
Total TPH C10-C36	800
Benzene	<1
Toluene	<5
Ethylbenzene	<2
Total xylenes	ND
Naphthalene	1.4
Arsenic	0.023
Lead	<0.001
Zinc	0.67



Legend:

- Fill
- Sand
- Clay
- Standing Water Level

Legend:

Exceeds the adopted acceptance criteria

All soil concentrations in mg/kg

Metals concentrations in groundwater in mg/L

Organics concentrations in groundwater in µg/L

ND = not detected

THIS IS ONE INTERPRETATION ONLY

OTHER INTERPRETATIONS ARE POSSIBLE

Drawn: AO Approved: TO Date: 17/06/2009

Job No: 42424195 File: 42424195.006.wor

Client

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Project

MOBIL SERVICE STATION PP2 ESA  
27 MARKET STREET MERIMBULA, NSW

Title

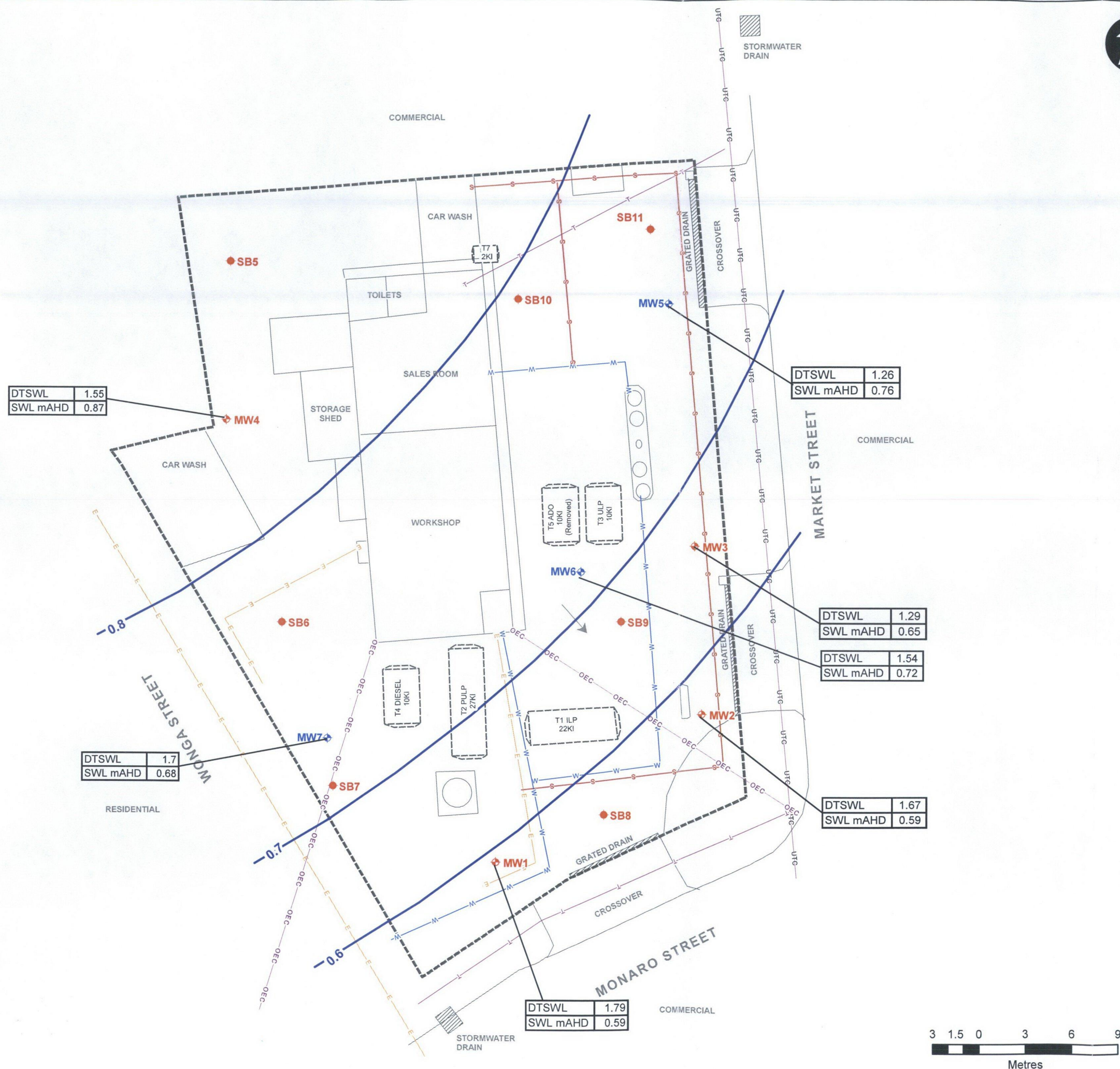
GEOLOGICAL CROSS SECTION B-B'

Figure: 4b

URS



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#### LEGEND:

- Monitoring Well Location (IT Environmental)
- Monitoring Well Location (URS)
- Soil Bore Location
- Electricity
- Overhead Electricity Cable
- Sewer
- Telstra
- Underground Telstra Cable
- Water
- Underground Storage Tanks
- Site Boundary
- Groundwater Flow Direction
- Inferred Groundwater Elevation Contour (mAHd)

DTSL Gauged Depth to Water (Metres)

SWL mAHd Groundwater Elevation (mAHd)

THIS IS ONE INTERPRETATION ONLY  
OTHER INTERPRETATIONS ARE POSSIBLE

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Job No.: 42424195 File No.: 42424195.004.mxd

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MOBIL SERVICE STATION PP2 ESA  
27 MARKET STREET MERIMBULA, NSW

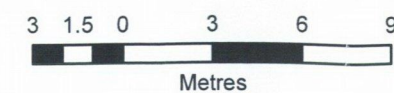
Title

INFERRED CORRECTED  
GROUNDWATER CONTOUR MAP

Figure: 5

URS





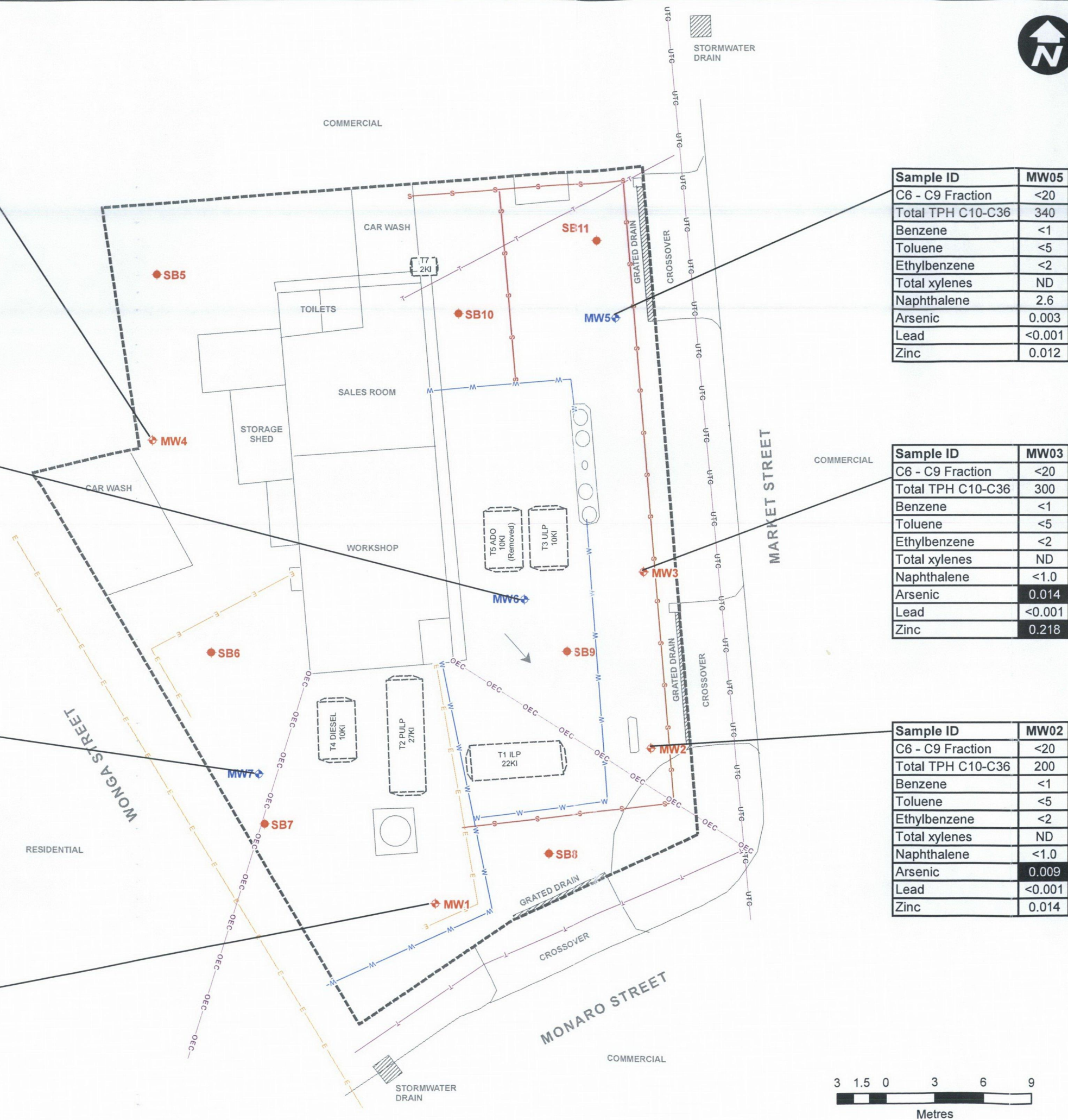


Sample ID	MW04
C6 - C9 Fraction	<20
Total TPH C10-C36	800
Benzene	<1
Toluene	<5
Ethylbenzene	<2
Total xylenes	ND
Naphthalene	1.4
Arsenic	0.023
Lead	<0.001
Zinc	0.67

Sample ID	MW06
C6 - C9 Fraction	<20
Total TPH C10-C36	540
Benzene	<1
Toluene	<5
Ethylbenzene	<2
Total xylenes	ND
Naphthalene	1.2
Arsenic	0.01
Lead	<0.001
Zinc	0.022

Sample ID	MW07
C6 - C9 Fraction	<20
Total TPH C10-C36	3110
Benzene	<1
Toluene	<5
Ethylbenzene	10
Total xylenes	ND
Naphthalene	4.2
Arsenic	0.002
Lead	<0.001
Zinc	0.026

Sample ID	MW01
C6 - C9 Fraction	<20
Total TPH C10-C36	1000
Benzene	<1
Toluene	<5
Ethylbenzene	<2
Total xylenes	ND
Naphthalene	<1.0
Arsenic	0.028
Lead	<0.001
Zinc	0.016



## LEGEND:

- Monitoring Well Location (IT Environmental)
- Monitoring Well Location (URS)
- Soil Bore Location
- Electricity
- Overhead Electricity Cable
- Sewer
- Telstra
- Underground Telstra Cable
- Water
- Underground Storage Tanks
- Site Boundary
- Groundwater Flow Direction

## Legend:

**Exceeds the adopted acceptance criteria**  
Metals concentrations in groundwater in mg/L  
Organics concentrations in groundwater in µg/L  
ND = Not Detected

THIS IS ONE INTERPRETATION ONLY  
OTHER INTERPRETATIONS ARE POSSIBLE

Whilst every care is taken by URS to ensure the accuracy of the services or utilities data and site boundaries, URS makes no representation or warranties about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility and liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and the costs which may be incurred as a result of data being inaccurate in any way for any reason.

Drawn: AO    Approved: TO    Date: 17/06/2009

Job No.: 42424195    File No.: 42424195.008.mxd

Client

MOBIL OIL AUSTRALIA  
PTY LTD

Project

MOBIL SERVICE STATION PP2 ESA  
27 MARKET STREET MERIMBULA, NSW

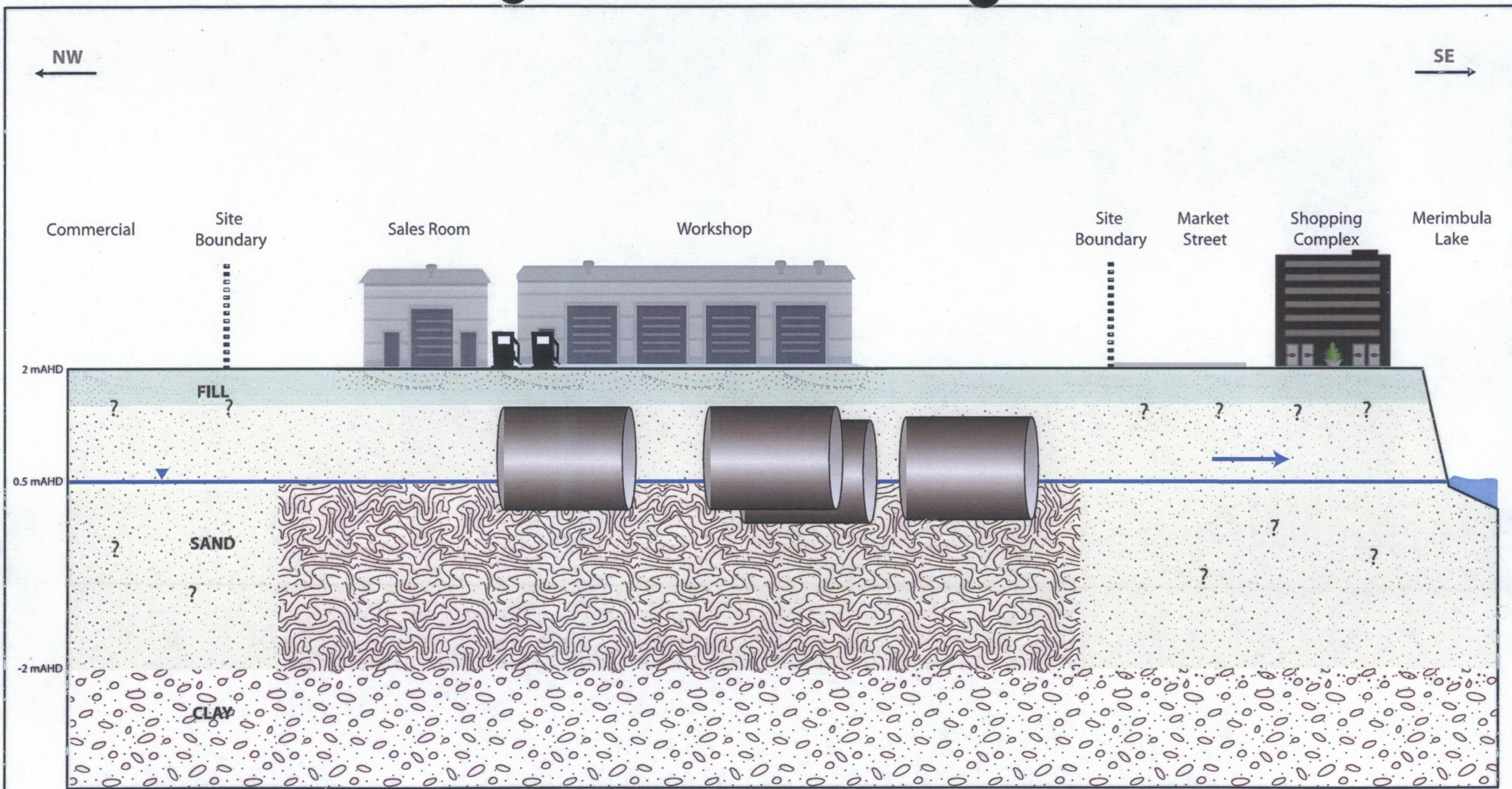
Title

GROUNDWATER ANALYTICAL  
RESULTS MAP

Figure: 7

URS





NOT TO SCALE

**Legend:**

- Fill
- Sand
- Clay
- Dissolved Phase Impact
- Groundwater
- Groundwater Migration Pathway


Client  MOBIL OIL AUSTRALIA PTY LTD	Project  MOBIL SERVICE STATION PP2 ESA 27 MARKET STREET MERIMBULA, NSW			Title  REVISED SITE CONCEPTUAL MODEL
	<div>Drawn: AO</div> <div>Approved: TO</div> <div>Date: 09/02/2009</div>			
	Job No.: 42424195			Figure: 8
	File No.: 42424195.001.ai			

Figure: 8



## Appendix A Project Management Documentation



02 4636 6659

**Mobil Oil Australia Pty Ltd** (ACN 88 004 052 984)  
12 Riverside Quay, Southbank VIC 3006

**FAX TRANSMISSION**

**To:** Tom Onus  
URS Australia Pty Ltd  
**Fax:** 02-8925 5555  
(including this page)

**Date:** 30/04/09**No. of Pages:** 4**Subject:** Merimbula call-off**From:** Nikki Maksimovic

**Phone :** (02) 4658 1392 or 0418 965 242 **Fax :** (02) 4658 1611  
**Email :** [nikki.maksimovic@exxonmobil.com](mailto:nikki.maksimovic@exxonmobil.com)

**CC:**

FYI,  
Thanks.

Regards,



Nikki Maksimovic  
Project Manager  
ExxonMobil Environmental Services

This message is intended for the addressee. It is confidential and may contain legally privileged information. Unless you are the addressee, please do not copy the document or any of the information. If you have received this document in error, please let us know by telephone.

Apr 30 09 05:56p

N.Maksimovic

02-4636 6659

p.2

30. APR. 2009 10:40

TO: NIKKI MAKSIMOVIC

02 4636 6659

Mobil Oil Australia Pty Ltd

ABN 88 004 052 984

All Invoices to:  
PO Box 3157  
Melbourne VIC 3001

**Mobil**

30.04.09

1

CALL-OFF NO. 10 /45664595  
FROM OUTLINE AGRMT. 46004620

URS AUSTRALIA PTY LTD  
LEVEL16, 240 QUEEN STREET

ATTN: L. Townsend

BRISBANE  
QUEENSLAND 4000

Supply materials and/or provide services detailed below against the Purchase Order or Call-off number stated above.

**APPLICABLE TERMS:**

The terms which apply to and govern this Order are:

1. Any relevant terms contained in this Order plus the existing Agreement, identified by its number at the top of this Order; or
2. If no Agreement number is provided, the general terms and conditions, addenda and exhibits which are identified below and available as of the date of this Order at the following website: <http://www.exxonmobil.com/potermes> and any additional terms, conditions, addenda, and/or exhibits that are not available on the website that are included in Special Conditions section of this Order.

**Materials**

AP0001A Materials Purchase Order Terms - Australia

**Services**

AP0004A Services Purchase Order Terms (SA) - Australia

- AP0016A Appendix 1 - Invoicing and Payment
- AP0017A Appendix 2 - Alcohol and Drugs - Higher
- AP0019A Appendix 3 - SRK - OIMS critical
- AP0021A Appendix 4 - Workplace Harassment
- AP0022A Appendix 5 - Product Quality
- AP0023A Appendix 6 - Background Checks for non-employees
- AP0024A Appendix 7 - Mobile Phone Usage

If Supplier engages in any conduct (including, but not limited to, performance or part performance) that recognizes the existence of a contract pertaining to the goods or services described in this Order, then Supplier expressly acknowledges that:

1. Supplier has read, understood and agrees to comply with the terms, conditions, addenda, and exhibits:
  - a) contained in the Agreement whose number is specified above; or
  - b) provided at the website address specified above and the additional terms included in this Order (if any).
2. It is the intent of Supplier and Purchaser that no signatures are required in order for this Order to be enforceable.

In the absence of express written agreement modifying the terms of this Order:

1. Purchaser will not be bound by any terms contained in any acknowledgement, invoice, or other document by or from Supplier pertaining to this Order, or proposed at any time by Supplier in any manner, written or oral, that add to, vary from, or conflict with the terms and conditions, exhibits, or addenda in this Order. Any such terms are deemed both to be material alterations to this Order and objected to by Purchaser without need of further notice of objection.
2. Purchaser's full or partial payment for services or goods provided shall not be considered as an acceptance of any terms contained in any acknowledgement, invoice, or other document accompanying the services or goods or provided by Supplier pertaining to this Order, or proposed at any time by Supplier in any manner, written or oral, that add to, vary from, or conflict with the terms and conditions contained within or referenced by this Order.

The terms stated in this Order take priority to the extent of any inconsistency with the existing Agreement

Supplier's acceptance is limited exclusively to the terms and conditions, exhibits, and addenda expressly stated in or incorporated into this Order.

Supplier must contact the Procurement contact on this Order before proceeding if:

1. no terms are identified in this Order; or
2. an existing Agreement number is referenced in this Order that Supplier does not believe is the correct agreement; or
3. terms are identified in this Order by reference to the website and Supplier does not have access to the internet.

Supplier is advised to print a copy of the documents on this website which are incorporated into this Order for reference.

02 4636 6659

**Mobil Oil Australia Pty Ltd**  
ABN 88 004 052 904

All Invoices to:  
PO Box 3157  
Melbourne VIC 3001

CALL-OFF NO. 10 /45664595  
FROM OUTLINE AGRMT. 46004620

**Mobil**

30.04.09

2

**DELIVERY TERMS:**

FIS Free into store at Buyer destination  
Seller provides packaging free of charge  
Seller bears insurance to Buyers Store  
Seller responsible for Customs Clearance

**PAYMENT TERMS:**

Payment due 30 days from receipt  
of correct invoice

Merimbula NO1063 - Gap Closure Post Phase. 2 ESA

**1. REPRESENTATIVES**

Company's Call-Off Representative shall be Nikki Maksimovic  
All invoices, quoting the Call-Off number nominated above  
are to be forwarded to the Company's representative at:

Mobil Oil Australia Pty Ltd  
PO Box 3157  
Melbourne VIC 3001

Contractor's Call-Off Representative shall be Lizzie Townsend

**2. COMPENSATION**

As set out in the Contract. The maximum cost for the  
Services set forth by this Call-Off is \$43,253.39  
This estimated cost shall not be exceeded without  
prior Company written approval.

In accordance with the Rates set out in the Contract.

**3. SERVICES**

In accordance with the Scope of Services attached hereto.

**4. SPECIAL CONDITIONS**

Nil

ITEM	MATERIAL DEL. DAT	QTY. UNIT	PRICE PER UNIT	TOTAL PRICE
001	00921854 30.12.09	UNIT	1.00	

\*\*\*\*\*

CONSULTING, ENVIRONMENTAL, IN ACCORDANCE  
WITH THE FOLLOWING:

Merimbula NO1063

Conduct PP2 ESA, gap closure, NO1063/02

Merimbula, NSW  
7197 NM

An ExxonMobil Subsidiary

Apr 30 09 05:57p N.Maksimovic  
30. APR. 2009 10:42

02-4636 6659

p.4

02 4636 6659

**Mobil Oil Australia Pty Ltd**  
ABN 68 004 052 984

All Invoices to:  
PO Box 3157  
Melbourne VIC 3001

CALL-OFF NO. 10 /45664595  
FROM OUTLINE AGRMT. 46004620

**Mobil**

30.04.09

3

Total Price

AUD

43,253.39

Contact: Vaughan Griffiths  
T/Phone: (03) 9286 5335

NR: ALS CALL-OFF = 10/45664595

An ExxonMobil Subsidiary

4500624

4500625  
-FALS

### 1 Work Request Details

Work Request Form No.  
Work Request Form Revision  
Consultant's Job Reference / Invoice No.  
Date Work can Commence  
Expected Work Completion Date  
Estimated Due Date for Draft Report  
Purpose  
GRA Project Manager  
GRA Alternative Contact

NO1063/2
0
8/05/2009
22/05/2009
12-June-2009
Divestment Due Diligence
Nikki Maksimovic (02 4636 6654) or (0418 965 242)
Andrew Hunt (03 9286 5305) or (0422 368 870)

### 2 Site Details

Facility Type  
ExxonMobil Site Number  
Site Name  
Site Street Address  
Site Owner Name  
Site Operator  
ExxonMobil Internal Client Name  
Territory Manager  
GRA Client Name  
Current Status  
Power available on site  
Water available on site  
Mobil Padlock on fence (if applicable)

Service Station
NO1063
Mobil Service Station Merimbula
27 Market Street, Merimbula, NSW
Mobil Oil Australia Pty Ltd
Closed - To be decommissioned.
?
?
? Site access to be coordinated with Nikki

### 3 Scope of Works

Drilling Rate (m/day)  
Concrete Pavement Depth (m)

15
0.20

Offsite Traffic Management (Days)  
Concrete coring (m)  
Interim Soil Gas Survey Report required?

0
0.6
No
0
3
2

Predrilling Protocol - Non Critical Areas, when using Hand Auger (number of bores)

Predrilling Protocol - Non Critical Areas, when using Airknifing (number of bores)

Consultant Supervision for Air Knifing 1.2 mBGL (number of bores)

3 holes

Any bores in Critical Zones?

N

If "Y", see Additional Costs section for costs associated with HSE process and approval.

#### Soil Bores

Bores D1

No.  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

0	Bore Diameter (mm)	50
None		
None		0.0

Bores D2

No.  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

0	Bore Diameter (mm)	50
None		
None		0.0

Bores D3

No.  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

0	Bore Diameter (mm)	50
None		
None		0.0

Bores D4

No.  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

0	Bore Diameter (mm)	50
None		
None		0.0

GRA - POST PHASE 2 ESA WRF: NO1063/2 Rev:0

**Monitoring Wells**

**Wells W1**

No.  
Construction  
Flush Mounted Well Head/s  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

3	Bore Diameter (mm)	50
	Permanent Well	
3	Above Ground Well Head/s	0
	Hollow auger drilling	5.0
	None	0.0

**Wells W2**

No.  
Construction  
Flush Mounted Well Head/s  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

0	Bore Diameter (mm)	50
	None	
	Above Ground Well Head/s	0
	None	
	None	0.0

**Wells W3**

No.  
Construction  
Flush Mounted Well Head/s  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

0	Bore Diameter (mm)	50
	None	
	Above Ground Well Head/s	0
	None	
	None	0.0

**Well W4**

No.  
Construction  
Flush Mounted Well Head/s  
Primary Drilling Method / Depth  
Secondary Drilling Method / Depth

0	Bore Diameter (mm)	50
	None	
	Above Ground Well Head/s	0
	None	
	None	0.0

**Well Sampling / Testing**

Sampling Rate (wells/day)

7	Approx water column height in wells (m)	2.0
---	---	-----

50mm Wells

Develop Wells

Sample Wells

Sampling Period Wells (Days)

3	100mm Wells Develop Wells	
7	Sample Wells	
1	Sampling Period Wells (Days)	0

Gauge Wells

Survey Wells

Sample Method

7	Aquifer Recovery Tests (Wells)	0
7	PSH Baildown Tests (Wells)	0
	Bailer	



GRA - POST PHASE 2 ESA WRF: NO1063/2 Rev:0

**QA/QC Sampling**

**Soil**

Trip Blank  
Field Blanks  
Rinsate Blanks  
Intralaboratory splits  
Interlaboratory splits (secondary lab)

A	B	C	D	E	F	G	Notes:
1							
1	1	1					
1	1	1					
1	1	1	0		0	0	
1	1	1	0		0	0	

**Groundwater**

Trip Blank  
Field Blanks  
Rinsate Blanks  
Intralaboratory splits  
Interlaboratory splits (secondary lab)

1							
1	1	1					
1	1	1					
1	1	1	0	0	0		
1	1	1	0	0	0		

**Abandonment**

Temporary 50mm Wells (m)  
Soil Bores (m) 50mm bores only  
Soil Bores (m) 100mm bores only  
Test pit(s) reinstatement requirements

0	Permanent 50mm Wells (m)	0
0	Permanent 100mm Wells (m)	0
0		

**Management/Waste Disposal**

Bulking Factor  
Soil Disposal (200 ltr Drums)

1.5	GW Disposal (200 ltr Drums)	2
2	PSH Disposal (50 ltr Drums)	

**Utility Pit Vapour Monitoring**

No of pits

8	No. of third party approvals (if req'd)	
---	---	--

**4 Report Format**

Draft  
PDF Email  
PDF CD  
Final Copies  
Unbound copies

No.		No.
1	Additional Reports (Hard Copy)	
1	Additional Reports (CD)	
1	WRF to be Prepared by Consultant	Y
2	No. of Hours for WRF Preparation	2
	Site Size	Medium (5-8 Wells)

**5 Consultant Project Team Identification**

Fax Number

Sydney, 02 8925 5555
----------------------

**Consultant Key Team Members**

Project Manager (mandatory)  
Site Supervisor (mandatory)  
Site Supervisor #2 (optional)  
Peer Reviewer (optional)

Name	OHS Training	AIP Training
Tom Onus	Y	Y
Tom Onus	Y	Y
Matt James	Y	Y
Seth Molinari	Y	Y



**6 Mobilisation and Other**

Loss Prevention Observation Allowance  
 Estimated fieldwork req'd for drilling (days)  
 Estimated fieldwork req'd for groundwater sampling (days)  
 Estimated Distance from Office (km -straight line measure)  
 Per diem (Meals and Incidentals) - Consultant/Driller (number of nights)  
 Number of Mobilisations  
 Local Transport days  
 Sub-contractor equipment requiring mobilisation  
 Airfares (\$)

Consultant	Sub-Contractor
1	
2	
1	
450	450
4	3
3	3
Drill rig	
\$	-

**7 Additional Costs (excl GST)**

Additional Costs

\$
\$
\$
\$
\$
\$
\$
\$
\$
\$

Notes:

Airknife rig cost estimate (including handling fee)
Surveyor cost estimate (including handling fee)
Added cost for regional waste disposal (including % handling fee)
Accommodation (including 5% handling fee)
Mobilisation cost estimate (>300km) <i>PK</i>
Discuss history of surrounding area with The Merimbula-Inlay historical Society to identify potential historical upgradient sources
Type Additional Cost Description here
Type Additional Cost Description here
Type Additional Cost Description here
Type Additional Cost Description here

**8 Total Estimated Cost (excl GST)**

Phase 2 ESA (assuming PS = 105%)  
 Secondary laboratory samples (Incl markup)

\$
\$
\$

Primary laboratory samples (Incl markup)

\$
----

Indicative cost only. This is not included in the WRF / ITP value.

**9 Agreement**

I have read and understood the requirements of the GRA Client and this work request is in accordance with the requirements of the GRA Client and the GRA ESA Specification



GRA Project Manager

29/04/09  
 Date

I have read and understood the requirements of this work request and shall perform the works in accordance with the requirements of this work request and the GRA Specification

  
 Consultant Project Manager

17/4/09  
 Date

  
 Consultant Project Director

17/4/09  
 Date

WRF Rev 5.1Mar09

**Australian Institute  
of Petroleum**

Work Description: Clear locations for Drilling & GW well installation  
Tools/Equipment to be used: Electromagnetic cable locator, Concrete corer + Airline Rig

Date : 01/07/2005

**Australian Institute  
of Petroleum**

IF WORK EXTENDS BEYOND ONE DAY, A NEW FORM MUST BE COMPLETED FOR EACH DAY

Tools/Equipment to be used: Geoprobe rig

☒ Inside and outside hazardous areas within the site boundary  
Complete Sections A, B, C

- Yes All STATUTORY REGULATIONS applying to the job shall be complied with
- Yes LPG or PETROLEUM PRODUCTS delivery into site storage tanks will not impact work
- Yes FLAMMABLE or COMBUSTIBLE product and/or materials within 8 metres of work area will not impact work
- Yes There is NO ENTRY into any EXCAVATION or PIT, or into any TANK or other Confined Space eg. turret, pit, sump etc.

- Yes Electrical equipment (including all battery operated items such as cordless drills)
- Yes Petrol driven devices
- Yes Excavation equipment (motorised)
- No Blow torches / soldering equipment
- No Oxy-acetylene or electric welding equipment
- No Matches / cigarette lighters
- Yes Concrete cutting, breaking or drilling equipment
- No Grinding equipment
- No Any other device which can produce or cause a source of ignition

For Reference  
Work Permit  
Number  
Where Applicable

SWP-18/05/09

✓	✓				✓	✓	✓
---	---	--	--	--	---	---	---

5
5
5

- Dry Powder fire extinguishers (9kg min. or equivalent) within work area
- Protective clothing and full cover footwear to be worn
- Safe access / egress to and from works area
- Work "At Heights" complies with WH&S regulations
- Electrics isolated and tagged and locked out where possible
- Transfer and/or Dispensing pumps to be shut down – valves closed
- Barriers erected around work area
- Extension cables must not cross the hazardous areas
- Wet down area for concrete breaking or drilling
- Check work will not affect underground services, eg.  
telephone, electricity, pipelines, etc.

All in accordance with statutory and client requirements

**ADDITIONAL PRECAUTIONS**  
(to be completed by contractor if necessary)

Reference No **URS-HSEP**

COMMENTS: CLOSED SITE

Date : 01/07/2005

**AIP**  
Australian Institute  
of Petroleum

Contractor Company Name:

Oil Company: MOBIL

Location Name:

Site No:

Job/Order No:

**Address:**

Work Description: Minerals GME 7 wells

Refer Hazards Map and identify work location for completion of checklist. Tick ☐ below.

☐ Inside hazardous areas  
Complete Sections A, B, D

☐ Outside hazardous areas  
Complete Sections A, C, D

☐ Inside Sales Building  
Complete Sections A, D

**Section A – Conditions** ( *Check that conditions are acceptable* )

I have checked that:

- All STATUTORY REGULATIONS applying to the job shall be complied with
- LPG or PETROLEUM PRODUCTS delivery into site storage tanks will not impact work
- FLAMMABLE or COMBUSTIBLE product and/or materials within 8 metres of work area will not impact work
- There is NO ENTRY into any EXCAVATION or PIT, or into any TANK or other Confined Space, e.g. turret, pit, sump, etc. where oxygen deficiency may exist

YES Write YES/NO. If YES, conditions are acceptable to proceed. If NO, refer to person who issued work request.

**Section B – Inside Hazardous Areas** ( refer to Hazards Map to verify )

The contractor is to check that the equipment listed will not be operated in the hazardous areas:

Write "YES/NO" when checked:

- ~~NA~~ Electrical equipment (including all battery operated items such as cordless drills)
- ~~NA~~ Petrol driven devices
- ~~NA~~ Excavation equipment (motorised)
- ~~NA~~ Blow torches / soldering equipment
- ~~NA~~ Oxy-acetylene or electric welding equipment
- ~~NA~~ Matches / cigarette lighters
- ~~NA~~ Concrete cutting, breaking or drilling equipment
- ~~NA~~ Grinding equipment
- ~~NA~~ Any other device which can produce or cause a source of ignition

**Any "YES" answers will require a separate permit to be issued. NO WORK TO COMMENCE.**

**Section C – Outside Hazardous Areas** ( refer to Hazards Map to verify )

The contractor is to check that the equipment listed will not be operated within the site boundary:

Write "YES/NO" when checked:

- \_\_\_\_\_ Oxy-acetylene or electric welding equipment
- \_\_\_\_\_ Blow torches / soldering equipment
- \_\_\_\_\_ Excavation equipment (motorised)
- \_\_\_\_\_ Concrete cutting, breaking or drilling equipment
- \_\_\_\_\_ Grinding equipment
- \_\_\_\_\_ Any other device which can produce or cause a naked flame

**Any "YES" answers will require a separate authorisation. NO WORK TO COMMENCE.**

**Section D – Precautions to be taken – All work – Contractor must ensure the Work Area is Safe**

**"YES" "N/A" – (Not Applicable)**

- | Preparation                         |   | Additional              |
|-------------------------------------|---|-------------------------|
| <input checked="" type="checkbox"/> | Dry Powder fire extinguishers (9 kg min. or equivalent) within work area                      | ADDITIONAL _____        |
| <input checked="" type="checkbox"/> | Protective clothing and full cover footwear to be worn  | (to be completed) _____ |
| <input checked="" type="checkbox"/> | Electrics isolated and tagged   | _____                   |
| <input checked="" type="checkbox"/> | Dispensing pumps to be shut down  | _____                   |
| <input type="checkbox"/>            | Barriers erected around work area   | _____                   |
| <input checked="" type="checkbox"/> | Extension cables must not cross the hazardous areas   | _____                   |
| <input checked="" type="checkbox"/> | Wet down area for concrete breaking or drilling   |                         |
| <input checked="" type="checkbox"/> | Check work will not affect underground services, e.g. telephone, electricity, pipelines, etc. |                         |

**ADDITIONAL PRECAUTIONS**  
(to be completed by contractor if necessary)

**No work to be commenced until "YES" or "N/A" apply and are ticked.**

TIME ON SITE START TIME: 8.00 AM/PM

FINISH TIME: 1:18 AM (PM)

- The contractor will observe the above conditions and precautions for work undertaken for this job.

CONTRACTOR (Print Name): NORM KOWAL

CONTRACTOR (Print Name): NORM KONT

Signed: M/902 2/10/05 OK

Signed: M. J. [Signature] 2/8/05

- The Site Operator acknowledges that this job will be undertaken, and witnesses the Contractor's signature

SITE OPERATOR (Print Name): \_\_\_\_\_

SITE OPERATOR\* (Print Name):                     

Signed: \_\_\_\_\_ / /

Signed: \_\_\_\_\_

COMMENTS:

**Dealer Stamp:**

THE CLOSED SERVICE

\* Print name only if different from start signature.

# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

Date	13/05/09
------	----------

URS Site Supervisor: LUKE ALEXANDER	Site Name: FMSS MERRIMBULA
Contact Phone: 0437470 241	
GRAPM: NIKKI MAXIMOVIC	Address: MARKET ST
Contact Phone:	MERRIMBULA, NSW

### SECTION A – SAFE WORK PROCEDURE

When the completed AIP permit indicates additional authorisation or work permit is required, this procedure and attached checklist must be completed to undertake routine hazardous and intrusive activities;

- At the beginning of each day before any activities commence.
- Whenever the workgroup or site supervisor changes.

This Safe Work Procedure applies to Mobil controlled sites or Mobil GR controlled activities at the following facilities only. Please indicate ✓ facility type below.

- ☒ Service Stations operating or closed,
- ☐ Operating depots (unless another on site Permit System takes precedence),
- ☐ Closed or non-operating depots and retail facilities at depots.
- ☐ Aviation depot (small, country)
- ☐ All off-sites works adjacent to the above sites where URS is working for Mobil ie a Mobil GR controlled activity.

This Permit CANNOT be used for the following;

- Works on large aviation facilities
- Works on refineries or refinery controlled activities
- Works on terminals or terminal controlled activity.

Any deviations from the above definitions must be approved in writing by both the

- URS Asia Pacific HSE Manager and
- Mobil Team Leader



## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Routine Hazardous and Intrusive Activities

This permit can only be issued for activities where the equipment listed below is used.

**Note: For activities that require the use of equipment not listed below, a separate Mobil Work Permit must be issued.**

Plant and Equipment Hazard Identification and Mitigation Checklist			
Exist Y/N	Plant and equipment to be used in Hazardous areas	Controls to enable equipment to be operated safely in hazardous areas	Initial when in place
Y	Motor vehicles	<del>Address</del> PID/LEL monitoring. Minimise use	LA
Y	Drill rig	PID/LEL monitoring, barricade work area	LA
Y	Vacuum truck (used for Non Destructive Digging Only)	"	LA
N	Electric concrete corer	" " & wetdown work area. Caution ↓	
Y	Petrol driven concrete corer		LA
Y	Generator	PID/LEL monitoring, tagged, place in safe area	
N	Compressor		
Y	Wet vac	PID/LEL monitoring. Caution of cable, tagging.	LA
N	Interface probe		
N	Chem. kit		
Y	Service locating equipment		
N	Survey equipment		
Y	Vapour monitoring equip.	Intrinsically safe.	LA
Y	Digital camera	PID/LEL monitoring. minimal use	LA

### Location of Works

Location	Yes/No
On Site	Yes
Off Site	No
Hazardous area	Yes
Critical Zone*	No

\* Intrusive works in the Critical Zone can only proceed with approval from

- URS Asia Pacific HSE Manager and
- Mobil Team Lead

Issue No:

V11

Issue Date:

8<sup>th</sup> May 2008

# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

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## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

The procedure and checklist must be signed off as complete at the end of each day when all site activities are complete at the site has been left in a safe a clean state.

It is expected that upon arrival at any site, a "Take 5" assessment will be carried out and recorded by employees before preparation for work activities commences.

### Preparations for Hazardous Work Activities

	Action	Comments	Initial when Complete or N/A
1.	Evaluate local traffic conditions with site operator and establish a traffic control program in accordance with the Mobil Traffic Management Plan	The traffic management plan must ensure the safety of all workers at the site. Work areas shall be set up so traffic can clearly see the barricades or workers.	LA
2.	Where works are undertaken off site, a current traffic management plan approved by local authorities must be available at the site.	This shall incorporate the engagement of traffic management subcontractors. And should be prepared well in advance of any site activities.	N/A
3.	Works that require the introduction of an ignition source require a survey of the WORK AREA with an LEL meter prior of commencement of on site and offsite works.	No work shall commence until the WORK AREA has been cleared with an LEL meter. The survey must be redone each time a new WORK AREA is established at the site. Gas detector survey results are to be recorded on the attached gas vapour test certificate.	LA
4.	Before any intrusive work commences, a thorough survey must be completed to identify all aboveground and below ground services that may be impacted by the proposed intrusive activities.	Below ground services shall be clearly identified and marked as per the Exxonmobil sub surface clearance procedure.	LA
5.	Subsurface Clearance Protocol checklist must be completed and faxed to Mobil GRAPM and the URS Project Manager	This should be done at least 24hours before work commences. A copy of the sub surface procedure and checklist should be kept on site with the file documentation.	LA
6.	Complete AIP "WORK CLEARANCE FORM" and visually confirm defined AIP "HAZARDOUS AREAS" onsite;	AIP "WORK CLEARANCE FORM" must be completed on every site regardless of the proposed activities.	LA
7.	Ensure the Scope of Work as outlined in the HSEP clearly describes all activities planned for the site for the day.	The Scope of Work should clearly identify all steps in the proposed work.	LA





## SAFE WORK PROCEDURE &amp; PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

8.	Conduct a toolbox meeting with all contractors indicating the specific requirements for the day's activities. Induct all personnel to site using the site specific URS Health Safety & Environment Plan.	All contractors must be familiar with the Scope of Work, and the specific requirements outlined in the HSEP before any activities are undertaken. All contractors must sign on to the HSEP before activities commence All PPE must be available and ready for use.	LA
9.	Check the condition of the contractor's equipment and ensure contractors have current maintenance records of plant and equipment.	All equipment should be in a sound state with no obvious signs of damage. All electrical leads must be tagged with a current electrical compliance tag.	LA
10.	Define exclusion zone around WORK AREA to ensure adequate work space is available for the proposed activities.	In addition to using a vehicle for protection, this should be done using 1m high bollards caution tape and signage.	LA
11.	Place 2 x 9kg Dry Chem. fire extinguishers inside the WORK AREA	Fire extinguishers should have a current service stamp, a security pin in place and be placed at a location that takes prevailing wind conditions into account.	LA
12.	Undertake mechanical and electrical isolation of all equipment including fuel dispensers inside HAZARDOUS AREAS where hazardous or intrusive activities are being undertaken. This must be done prior to commencement of works	The standard required for isolation must render the equipment inside the HAZARDOUS AREA inoperable. Refer to <b>Equipment Isolation Certificate</b> for adequate isolation standards.	N/A
13.	Complete the attached Safe Work Procedure Checklist		LA

**SAFE WORK PROCEDURE & PERMIT**

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## **AREA DEFINITIONS**

### **WORK AREA :**

- Radius from location of active works that provides adequate space to undertake the work safely. Nominally 5m.

### **HAZARDOUS ZONE :**

- 4m radius around fuel dispensers.
- 5m radius around LPG pump, tank and decant cylinders
- 4m radius around UST Dip/Fill points
- 1.5m radius around tank vents
- 1.5m radius around open wells.

### **CRITICAL ZONE :**

A detailed description of the critical zone can be referenced in the following document.

Global Remediation OIMS Manual  
System 3 – Design Practices / Project Management.

This includes

- 3m distance from all sub-surface electrical lines and gas supply lines.
- 3m distance from edge of tanks (including decommissioned tanks),
- 3m distance from operating dispenser islands and suspected underground lines and entire area between tank field and dispensers\*.

\*Refer to attached example of critical zone around fuel systems.

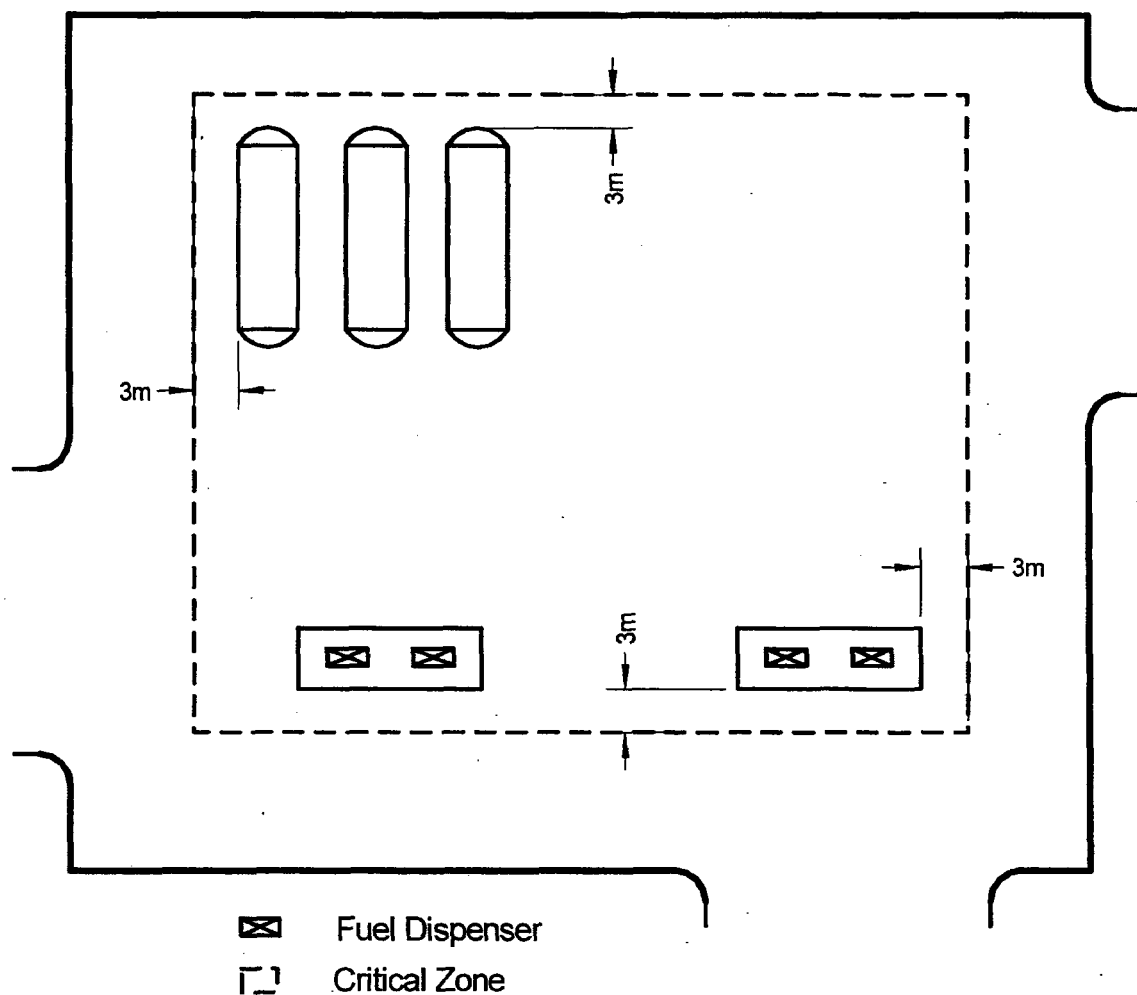


## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Critical Zone Around Fuel Systems

The following shows the Critical Zone on a typical service station fuel system





## SAFE WORK PROCEDURE &amp; PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

## SAFE WORK PERMIT – WORK PREPARATION CHECKLIST

Complete this form before each day of site works.

**HOT WORK:** is work which may create a spark with sufficient energy to ignite flammable gases or combustible dusts. This situation may arise due to the work being conducted or the equipment introduced to carry out the work and includes drilling.

**COLD WORK:** is work where there is no possibility of developing an ignition source anywhere within a Hazardous Area whether flammable gases are or are not present.

### Scope Of Work

Type of proposed activities	A detailed scope of work must be provided indicating each of the steps required to complete the works.
<input type="checkbox"/> Cold Work <input checked="" type="checkbox"/> Hot Work <input type="checkbox"/> Drilling  <b>Note:</b> This permit is not to be used for other activities such as excavation or tank removal.	Site Walkover Electromagnetic cable location Mark out of services. Concrete coring Cleanup area with wet vac Air hose to 1.5 m Backfill NDD hole. Pack up equipment. Leave Site.

Other Permits and Approvals (if appropriate permits)	Reference Numbers
<input checked="" type="checkbox"/> AIP Form <input checked="" type="checkbox"/> URS HSEP <input type="checkbox"/> Other	AP- Merimbula- 13/05/09 URS HSEP

# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Hazard Identification

The following hazard identification checklist must be completed before this permit can be issued.

Hazard Identification and Mitigation Checklist			
Exist Y/N	Hazards	Precautions/methods to control hazards	Initial when in place
Y	Flammable Vapour	PID / LEL monitoring	LA
N	Product (Liquids)		
	Sludges Solids		
Y	Sewers Drains	Water runoff & barricade drains	LA
Y	Dust	Wetdown work area	LA
Y	Services (below ground)	Electromagnetic cable location, NDB	LA
Y	Services (overhead)	Caution. Walkout <del>near</del> route. ensure <sup>safe</sup> clearances	LA
Y	Traffic	Caution of vehicles <sup>+ High</sup> moving <sup>in's</sup> around site	
N	Gravity (what can fall)		
N	Inertia (what can move)		
Y	Slip/Trip Hazards	Caution. Awareness of potential trip hazards & maintain tidy work area	LA
Y	Manual Handling	Team lifts <del>can</del> SAFE work lifting procedure	LA
Y	Open excavations	Barricade work area.	
N	Heat		
N	Combustible rubbish		
N	Access Problems		
N	Other Site Activities		
	Other (Specify)		



## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

## Fuel Dispenser Isolation Certificate (Mandatory)

**When intrusive work is undertaken inside the Hazardous Area, electrical equipment within that Hazardous Area must be isolated prior to the commencement of work.**

**Intrusive work within the Critical Zone is not permitted without the written approval of Mobil and the URS Health & Safety Manager.**

To satisfactorily isolate equipment, one of the following methods shall be applied:

### Method 1

- Electrically isolate the dispenser by opening the circuit breaker at the mains power supply board.
- Place a DO NOT OPERATE tag on the circuit breaker.
- Test the equipment to ensure it is de-energised.
- Place a lock on the dispensing hose to ensure it cannot be removed.
- Place an OUT OF SERVICE sign on equipment.

## Method 2

- Request the console operator to isolate the equipment at the dispensing console.
- Place a DO NOT OPERATE tag on the isolation switch.
- Test the equipment to ensure it is de-energised.
- Place a lock on the dispensing hose to ensure it cannot be removed.
- Place an OUT OF SERVICE sign on equipment.

N/A

[illegible]

# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Safe Work Procedure - Precautions

The following precautions must be taken when undertaking hazardous or intrusive activities on or off site.

	Action	Comments
1.	Before any drilling is commenced, the drilling checklist must be completed.	This is mandatory for each and every location.
2.	All unauthorised personnel must be excluded from the WORK AREA for the entire duration of work activities.	Unauthorised persons include anyone not directly associated with the work activities. If unauthorised persons are required to enter the WORK AREA, all work must cease until the area is cleared.
3.	All tools and plant must be kept inside the WORK AREA at all times.	Special care should be taken with placement of hoses etc. both inside and outside the WORK AREA. These can create significant trip hazards
4.	All necessary PPE as outlined in the HSEP must be worn during the identified work activities.	
5.	Constant LEL monitoring must be provided for all ignition sources. Undertake continuous LEL gas monitoring of atmosphere proximal to the hazardous equipment AT ALL TIMES with calibrated LEL Gas Detector. Check and record the Work Area every two hours.	The monitor must be operated in a location that takes into account the prevailing wind direction. The drill-rig and electrical equipment constitute potential IGNITION SOURCES. An IGNITION SOURCE within a HAZARDOUS ZONE = HOT WORK. Document LEL calibration and monitoring results on <b>Gas / Vapour Test Certificate</b> .
6.	During concrete coring ensure power leads and water hoses do not cross trafficable forecourt area;	All power leads must be tagged with a current safety compliance tag.
7.	Position mobile equipment inside WORK AREA Whenever a drilling rig or other large vehicle is required to travel in reverse, a spotter must be available while the vehicle is in motion.	During drill-rig setup, ensure all personnel are clear and in visual contact with the driver, all jacks are clear of surface infrastructure and there is no collision hazard with site infrastructure. Maintain safe working distance from overhead power lines - 3m radius for low voltage / 6m radius for high voltage;
8.	Maintain adequate work space inside WORK AREA	Refer to item 10 in Section A
9.	All waste soil and groundwater must be stored in sealed and appropriately labelled drums.	Arrangements should be made for prompt use of drums

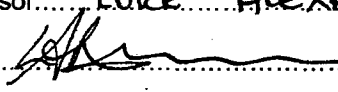


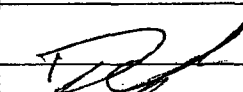

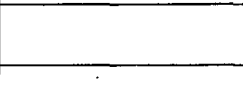
## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Permit Validation

No works are to be commenced until this permit is signed by the site supervisor and all contractors. By signing this permit validation it is expected that all documentation is complete and all precautions are in place to undertake work in a manner that protects the safety of all site personnel and minimises the risk of damage to property and impacts to the environment.

<p>Permit authorisation period is from: ..... 8 ..... am/pm Until : ..... 5 ..... am/pm</p>		
<p>As site supervisor, I authorise the activities as outlined in the Scope Of Work to be undertaken and equipment listed to be used subject to the precautions and safety measures identified in this Safe Work Procedure &amp; Permit.</p>		
<p>Date of Work: 13 MAY 2009</p>		
<p>URS Site Supervisor: LUKE ALEXANDER</p>		
<p>Signature: </p>		

Print Name	Signature	Date
DANNI CRITCHER		13-5-09
CHAD MEATHAM		13-5-09
Ron Box		13-5-09





## Drilling Checklist

**Note: Under no circumstances can drilling proceed without the location being cleared as specified in the Mobil Sub Surface Clearance Protocol.**

[illegible]





## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Work Completion Checklist

At the completion of the days activities the following checks should be carried out

	Action	Comments	Complete
1.	All tools and equipment should be removed from the site		
2.	Reinstate surface of work area on completion of each days activities	Area must be resealed and the area dry swept where required.	
3.	All isolations put in place to commence the work must be removed.		
4.	All permits can now be signed off		

<p align="center"><b>Site Recommissioning Sign-off</b></p> <p align="center"><i>The Site Supervisor must sign off when excavation/recommissioning complete</i></p> <p>All activities at the site are complete. The site has been left in a clean and safe state and all isolations have been removed.</p> <p>URS Site Supervisor:..... <u>LUKE ALEXANDER</u> .....</p> <p>Time:.....</p> <p>Signature:.....</p>
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Issue No:	V10
Issue Date:	10 <sup>th</sup> October 2007
Author	John Petersen – URS MEL
Reviewed By	Clive Hillier - Exxonmobil
Authorised By:	Jeff Smith – URS MEL



**URS****SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

Date

14/05/09

URS Site

Supervisor: LUKE ALEXANDER

Contact Phone: 0437 470 241

GRAPM: Nikki Maksimovic

Contact Phone:

Site

Name: FMSS Merrimbula

Address: Market St, Merrimbula

**SECTION A – SAFE WORK PROCEDURE**

When the completed AIP permit indicates additional authorisation or work permit is required, this procedure and attached checklist must be completed to undertake routine hazardous and intrusive activities;

- At the beginning of each day before any activities commence.
- Whenever the workgroup or site supervisor changes.

This Safe Work Procedure applies to Mobil controlled sites or Mobil GR controlled activities at the following facilities only. Please indicate ✓ facility type below.

- ☒ Service Stations operating or closed,
- ☐ Operating depots (unless another on site Permit System takes precedence),
- ☐ Closed or non-operating depots and retail facilities at depots.
- ☐ Aviation depot (small, country)
- ☐ All off-sites works adjacent to the above sites where URS is working for Mobil ie a Mobil GR controlled activity.

This Permit CANNOT be used for the following;

- Works on large aviation facilities
- Works on refineries or refinery controlled activities
- Works on terminals or terminal controlled activity.

Any deviations from the above definitions must be approved in writing by both the

- URS Asia Pacific HSE Manager and
- Mobil Team Leader



## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Routine Hazardous and Intrusive Activities

This permit can only be issued for activities where the equipment listed below is used.

**Note:** For activities that require the use of equipment not listed below, a separate Mobil Work Permit must be issued.

Exist Y/N	Plant and equipment to be used in Hazardous areas	Controls to enable equipment to be operated safely in hazardous areas	Initial when in place
Y	Motor vehicles	PID/LEL monitoring, caution whilst moving around site. High vis	LA
Y	Drill rig	" "	LA
N	Vacuum truck (used for Non Destructive Digging Only)		
N	Electric concrete corer		
N	Petrol driven concrete corer		
N	Generator		
N	Compressor		
Y	Wet vac		LA
Y	Interface probe	PID/LEL monitoring	LA
N	Chem. kit		
N	Service locating equipment		
N	Survey equipment		
Y	Vapour monitoring equip.	Intrinsically safe	LA
Y	Digital camera	PID/LEL monitoring. limit use	LA

### Location of Works

Location	Yes/No
On Site	Yes
Off Site	No
Hazardous area	Yes
Critical Zone*	No

\* Intrusive works in the Critical Zone can only proceed with approval from

- URS Asia Pacific HSE Manager and
- Mobil Team Lead

Issue No:	V11
Issue Date:	8 <sup>th</sup> May 2008

# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

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## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

The procedure and checklist must be signed off as complete at the end of each day when all site activities are complete at the site has been left in a safe a clean state.

It is expected that upon arrival at any site, a "Take 5" assessment will be carried out and recorded by employees before preparation for work activities commences.

### Preparations for Hazardous Work Activities

	Action	Comments	Initial when Complete or N/A
1.	Evaluate local traffic conditions with site operator and establish a traffic control program in accordance with the Mobil Traffic Management Plan	The traffic management plan must ensure the safety of all workers at the site. Work areas shall be set up so traffic can clearly see the barricades or workers.	LA
2.	Where works are undertaken off site, a current traffic management plan approved by local authorities must be available at the site.	This shall incorporate the engagement of traffic management subcontractors. And should be prepared well in advance of any site activities.	N/A
3.	Works that require the introduction of an ignition source require a survey of the WORK AREA with an LEL meter prior of commencement of on site and offsite works.	No work shall commence until the WORK AREA has been cleared with an LEL meter. The survey must be redone each time a new WORK AREA is established at the site. Gas detector survey results are to be recorded on the attached gas vapour test certificate.	LA
4.	Before any intrusive work commences, a thorough survey must be completed to identify all aboveground and below ground services that may be impacted by the proposed intrusive activities.	Below ground services shall be clearly identified and marked as per the Exxonmobil sub surface clearance procedure.	LA
5.	Subsurface Clearance Protocol checklist must be completed and faxed to Mobil GRAPM and the URS Project Manager	This should be done at least 24hours before work commences. A copy of the sub surface procedure and checklist should be kept on site with the file documentation.	LA
6.	Complete AIP "WORK CLEARANCE FORM" and visually confirm defined AIP "HAZARDOUS AREAS" onsite;	AIP "WORK CLEARANCE FORM" must be completed on every site regardless of the proposed activities.	LA
7.	Ensure the Scope of Work as outlined in the HSEP clearly describes all activities planned for the site for the day.	The Scope of Work should clearly identify all steps in the proposed work.	LA



**URS****SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

8.	Conduct a toolbox meeting with all contractors indicating the specific requirements for the day's activities. Induct all personnel to site using the site specific URS Health Safety & Environment Plan.	All contractors must be familiar with the Scope of Work, and the specific requirements outlined in the HSEP before any activities are undertaken. All contractors must sign on to the HSEP before activities commence All PPE must be available and ready for use.	LA
9.	Check the condition of the contractor's equipment and ensure contractors have current maintenance records of plant and equipment.	All equipment should be in a sound state with no obvious signs of damage. All electrical leads must be tagged with a current electrical compliance tag.	LA
10.	Define exclusion zone around WORK AREA to ensure adequate work space is available for the proposed activities.	In addition to using a vehicle for protection, this should be done using 1m high bollards caution tape and signage.	LA
11.	Place 2 x 9kg Dry Chem. fire extinguishers inside the WORK AREA	Fire extinguishers should have a current service stamp, a security pin in place and be placed at a location that takes prevailing wind conditions into account.	LA
12.	Undertake mechanical and electrical isolation of all equipment including fuel dispensers inside HAZARDOUS AREAS where hazardous or intrusive activities are being undertaken. This must be done prior to commencement of works	The standard required for isolation must render the equipment inside the HAZARDOUS AREA inoperable. Refer to <b>Equipment Isolation Certificate</b> for adequate isolation standards.	N/A
13.	Complete the attached Safe Work Procedure Checklist		LA

**SAFE WORK PROCEDURE & PERMIT**

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## **AREA DEFINITIONS**

### **WORK AREA :**

- Radius from location of active works that provides adequate space to undertake the work safely. Nominally 5m.

### **HAZARDOUS ZONE :**

- 4m radius around fuel dispensers.
- 5m radius around LPG pump, tank and decant cylinders
- 4m radius around UST Dip/Fill points
- 1.5m radius around tank vents
- 1.5m radius around open wells.

### **CRITICAL ZONE :**

A detailed description of the critical zone can be referenced in the following document.

Global Remediation OIMS Manual  
System 3 – Design Practices / Project Management.

This includes

- 3m distance from all sub-surface electrical lines and gas supply lines.
- 3m distance from edge of tanks (including decommissioned tanks),
- 3m distance from operating dispenser islands and suspected underground lines and entire area between tank field and dispensers\*.

\*Refer to attached example of critical zone around fuel systems.

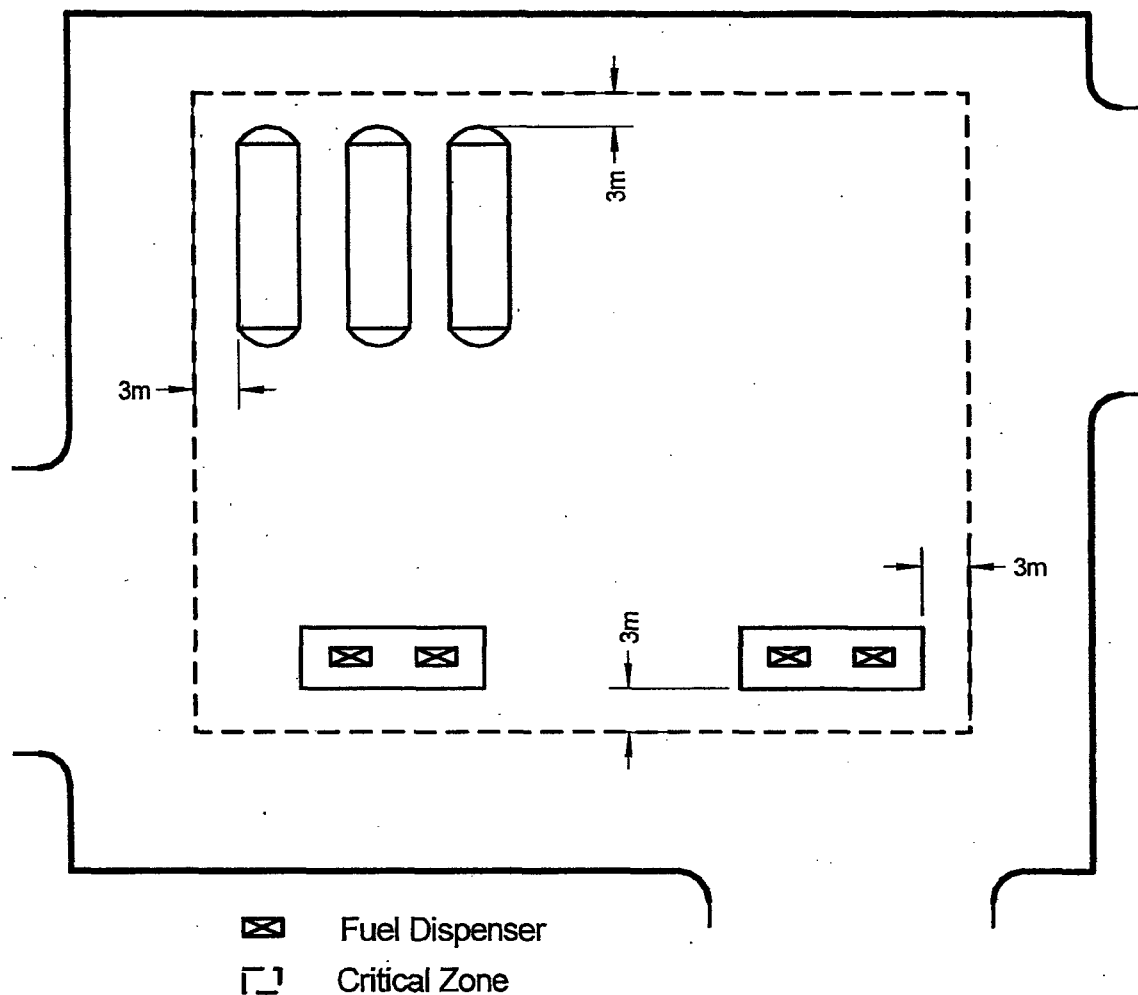


## SAFE WORK PROCEDURE &amp; PERMIT

Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).

### Critical Zone Around Fuel Systems

The following shows the Critical Zone on a typical service station fuel system





## SAFE WORK PROCEDURE &amp; PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

**SAFE WORK PERMIT – WORK PREPARATION CHECKLIST**

Complete this form before each day of site works.

**HOT WORK:** is work which may create a spark with sufficient energy to ignite flammable gases or combustible dusts. This situation may arise due to the work being conducted or the equipment introduced to carry out the work and includes drilling.

**COLD WORK:** is work where there is no possibility of developing an ignition source anywhere within a Hazardous Area whether flammable gases are or are not present.

**Scope Of Work**

Type of proposed activities	Detailed scope of work must be provided indicating each of the steps required to complete the work
<input type="checkbox"/> Cold Work <input checked="" type="checkbox"/> Hot Work <input checked="" type="checkbox"/> Drilling  <b>Note: This permit is not to be used for other activities such as excavation or tank removal.</b>	Access site Toolbox Setup rig Drill with push tube / soil sampling Drill with hollow flight augers Install monitoring well Install roadbox Develop well Leave site

Other permits and approvals	Reference numbers
<input type="checkbox"/> AIP Form <input type="checkbox"/> URS HSEP <input type="checkbox"/> Other	



## SAFE WORK PROCEDURE &amp; PERMIT

Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).

## Hazard Identification

The following hazard identification checklist must be completed before this permit can be issued.

Hazard Identification and Mitigation Checklist			
Exist Y/N	Hazards	Precautions/methods to control hazards	Initial when in place
Y	Flammable Vapour	P10 / LEL monitoring. Stop work if detected.	LA
N	Product (Liquids)		
N	Sludges Solids		
Y	Sewers Drains	Block off stormwater drains & wet vac	LA
N	Dust		
Y	Services (below ground)	Only drill in cleared locations. Caution.	LA
Y	Services (overhead)	Caution when raising mast	LA
Y	Traffic	High vis, caution	LA
Y	Gravity (what can fall)	Helmets + caution	LA
Y	Inertia (what can move)	Caution. High vis	LA
Y	Slip/Trip Hazards	Clean + tidy work area. Aware of uneven ground	LA
Y	Manual Handling	Share loads, SAFE lifting	LA
Y	Open excavations	Barricade boreholes.	
N	Heat		
N	Combustible rubbish		
N	Access Problems		
N	Other Site Activities		
	Other (Specify)		



## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

## Fuel Dispenser Isolation Certificate (Mandatory)

**When intrusive work is undertaken inside the Hazardous Area, electrical equipment within that Hazardous Area must be isolated prior to the commencement of work.**

**Intrusive work within the Critical Zone is not permitted without the written approval of Mobil and the URS Health & Safety Manager.**

To satisfactorily isolate equipment, one of the following methods shall be applied:

## Method 1

- Electrically isolate the dispenser by opening the circuit breaker at the mains power supply board.
- Place a DO NOT OPERATE tag on the circuit breaker.
- Test the equipment to ensure it is de-energised.
- Place a lock on the dispensing hose to ensure it cannot be removed.
- Place an OUT OF SERVICE sign on equipment.

## Method 2

- Request the consol operator to isolate the equipment at the dispensing consol.
- Place a DO NOT OPERATE tag on the isolation switch.
- Test the equipment to ensure it is de-energised.
- Place a lock on the dispensing hose to ensure it cannot be removed.
- Place an OUT OF SERVICE sign on equipment.

[illegible]



## SAFE WORK PROCEDURE &amp; PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Safe Work Procedure - Precautions

The following precautions must be taken when undertaking hazardous or intrusive activities on or off site.

	Action	Comments
1.	Before any drilling is commenced, the drilling checklist must be completed.	This is mandatory for each and every location.
2.	All unauthorised personnel must be excluded from the WORK AREA for the entire duration of work activities.	Unauthorised persons include anyone not directly associated with the work activities. If unauthorised persons are required to enter the WORK AREA, all work must cease until the area is cleared.
3.	All tools and plant must be kept inside the WORK AREA at all times.	Special care should be taken with placement of hoses etc. both inside and outside the WORK AREA. These can create significant trip hazards
4.	All necessary PPE as outlined in the HSEP must be worn during the identified work activities.	
5.	Constant LEL monitoring must be provided for all ignition sources. Undertake continuous LEL gas monitoring of atmosphere proximal to the hazardous equipment AT ALL TIMES with calibrated LEL Gas Detector. Check and record the Work Area every two hours.	The monitor must be operated in a location that takes into account the prevailing wind direction. The drill-rig and electrical equipment constitute potential IGNITION SOURCES. An IGNITION SOURCE within a HAZARDOUS ZONE = HOT WORK. Document LEL calibration and monitoring results on Gas / Vapour Test Certificate.
6.	During concrete coring ensure power leads and water hoses do not cross trafficable forecourt area;	All power leads must be tagged with a current safety compliance tag.
7.	Position mobile equipment inside WORK AREA Whenever a drilling rig or other large vehicle is required to travel in reverse, a spotter must be available while the vehicle is in motion.	During drill-rig setup, ensure all personnel are clear and in visual contact with the driver, all jacks are clear of surface infrastructure and there is no collision hazard with site infrastructure. Maintain safe working distance from overhead power lines - 3m radius for low voltage / 6m radius for high voltage;
8.	Maintain adequate work space inside WORK AREA	Refer to item 10 in Section A
9.	All waste soil and groundwater must be stored in sealed and appropriately labelled drums.	Arrangements should be made for prompt use of drums



## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Permit Validation

No works are to be commenced until this permit is signed by the site supervisor and all contractors. By signing this permit validation it is expected that all documentation is complete and all precautions are in place to undertake work in a manner that protects the safety of all site personnel and minimises the risk of damage to property and impacts to the environment.

Permit Validation	
Permit authorisation period is from: .....7.....am/pm Until : .....5.....am/pm	
As site supervisor, I authorise the activities as outlined in the Scope Of Work to be undertaken and equipment listed to be used subject to the precautions and safety measures identified in this Safe Work Procedure & Permit.	
Date of Work: 14/05/09	
URS Site Supervisor: LUKE ALEXANDER	
Signature:	

Print Name	Signature	Date
Craig Emme		14-5-09
Shane Barnes		14.5.9







### SAFE WORK PROCEDURE & PERMIT


**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

# Gas/Vapour Test Certificate

All readings carried out with an LEL gas detector must be recorded on the table below. The instrument used must be in good working order and have a current calibration certificate.

**If at any time the LEL Gas Detector becomes faulty, the hazardous work must be terminated until a reliable instrument is made available.**

The LEL gas detector must be challenged tested at the beginning of each day. The instrument should show an increased LEL reading and quickly return to zero.

Time	LEL %	Return to Zero. Y/N	Site Supervisor (signature)	Comments
7.00	47	Y		

[illegible]

Issue No:

V11

Issue Date:

8<sup>th</sup> May 2008**URS****SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

**Work Completion Checklist**

At the completion of the days activities the following checks should be carried out

	Action	Comments	Complete
1.	All tools and equipment should be removed from the site		
2.	Reinstate surface of work area on completion of each days activities	Area must be resealed and the area dry swept where required.	
3.	All isolations put in place to commence the work must be removed.		
4.	All permits can now be signed off		

**Site Recommissioning – Sign off**

*The Site Supervisor must sign off when excavation work has been completed.*

All activities at the site are complete. The site has been left in a clean and safe state and all isolations have been removed.

URS Site Supervisor: LUKE ALEXANDER

Time: .....

Signature: 

Issue No:	V10
Issue Date:	10 <sup>th</sup> October 2007
Author	John Petersen – URS MEL
Reviewed By	Clive Hillier - Exxonmobil
Authorised By:	Jeff Smith – URS MEL

**URS****SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

Date	21/05/09
------	----------

URS Site Supervisor: <u>NORM ROND</u>	Site Name: <u>FMSS Merimbula</u>
Contact Phone: <u>0408603 078</u>	
GRAPM: <u>NIKKI MAKSIMOVIC</u>	Address: <u>Mane-h SH</u>
Contact Phone: _____	<u>Merimbula</u>

**SECTION A – SAFE WORK PROCEDURE**

When the completed AIP permit indicates additional authorisation or work permit is required, this procedure and attached checklist must be completed to undertake routine hazardous and intrusive activities;

- At the beginning of each day before any activities commence.
- Whenever the workgroup or site supervisor changes.

This Safe Work Procedure applies to Mobil controlled sites or Mobil GR controlled activities at the following facilities only. Please indicate ✓ facility type below.

- ☒ Service Stations operating or closed,
- ☐ Operating depots (unless another on site Permit System takes precedence),
- ☐ Closed or non-operating depots and retail facilities at depots.
- ☐ Aviation depot (small, country)
- ☐ All off-sites works adjacent to the above sites where URS is working for Mobil ie a Mobil GR controlled activity.

This Permit CANNOT be used for the following;

- Works on large aviation facilities
- Works on refineries or refinery controlled activities
- Works on terminals or terminal controlled activity.

Any deviations from the above definitions must be approved in writing by both the

- URS Asia Pacific HSE Manager and
- Mobil Team Leader



## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Routine Hazardous and Intrusive Activities

This permit can only be issued for activities where the equipment listed below is used.

**Note: For activities that require the use of equipment not listed below, a separate Mobil Work Permit must be issued.**

Exist Y/N	Plant and equipment to be used in Hazardous areas	Controls to enable equipment to be operated safely in hazardous areas	Initial when in place
Y	Motor vehicles	RED/LEC Monitor	AK
N	Drill rig		
N	Vacuum truck (used for Non Destructive Digging Only)		
N	Electric concrete corer		
N	Petrol driven concrete corer		
N	Generator		
N	Compressor		
N	Wet vac		
Y	Interface probe	RED/LEC Monitor	AK
Y	Chem. kit		AK
N	Service locating equipment		
N	Survey equipment		
N	Vapour monitoring equip.	Intrinsically safe	AK
N	Digital camera	RED/LEC Monitor	AK

### Location of Works

Location	Yes/No
On Site	Y
Off Site	N
Hazardous area	N
Critical Zone*	N

\* Intrusive works in the Critical Zone can only proceed with approval from

- URS Asia Pacific HSE Manager and
- Mobil Team Lead

Issue No:

V11

Issue Date:

8<sup>th</sup> May 2008

# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

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## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

The procedure and checklist must be signed off as complete at the end of each day when all site activities are complete at the site has been left in a safe a clean state.

It is expected that upon arrival at any site, a "Take 5" assessment will be carried out and recorded by employees before preparation for work activities commences.

### Preparations for Hazardous Work Activities

	Action	Comments	Initial when Complete or N/A
1.	Evaluate local traffic conditions with site operator and establish a traffic control program in accordance with the Mobil Traffic Management Plan	The traffic management plan must ensure the safety of all workers at the site. Work areas shall be set up so traffic can clearly see the barricades or workers.	—
2.	Where works are undertaken off site, a current traffic management plan approved by local authorities must be available at the site.	This shall incorporate the engagement of traffic management subcontractors. And should be prepared well in advance of any site activities.	—
3.	Works that require the introduction of an ignition source require a survey of the WORK AREA with an LEL meter prior of commencement of on site and offsite works.	No work shall commence until the WORK AREA has been cleared with an LEL meter. The survey must be redone each time a new WORK AREA is established at the site. Gas detector survey results are to be recorded on the attached gas vapour test certificate.	NR
4.	Before any intrusive work commences, a thorough survey must be completed to identify all aboveground and below ground services that may be impacted by the proposed intrusive activities.	Below ground services shall be clearly identified and marked as per the Exxonmobil sub surface clearance procedure.	—
5.	Subsurface Clearance Protocol checklist must be completed and faxed to Mobil GRAPM and the URS Project Manager	This should be done at least 24hours before work commences. A copy of the sub surface procedure and checklist should be kept on site with the file documentation.	—
6.	Complete AIP "WORK CLEARANCE FORM" and visually confirm defined AIP "HAZARDOUS AREAS" onsite;	AIP "WORK CLEARANCE FORM" must be completed on every site regardless of the proposed activities.	NR
7.	Ensure the Scope of Work as outlined in the HSEP clearly describes all activities planned for the site for the day.	The Scope of Work should clearly identify all steps in the proposed work.	NR

# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

8.	Conduct a toolbox meeting with all contractors indicating the specific requirements for the day's activities. Induct all personnel to site using the site specific URS Health Safety & Environment Plan.	All contractors must be familiar with the Scope of Work, and the specific requirements outlined in the HSEP before any activities are undertaken. All contractors must sign on to the HSEP before activities commence All PPE must be available and ready for use.	NR
9.	Check the condition of the contractor's equipment and ensure contractors have current maintenance records of plant and equipment.	All equipment should be in a sound state with no obvious signs of damage. All electrical leads must be tagged with a current electrical compliance tag.	—
10.	Define exclusion zone around WORK AREA to ensure adequate work space is available for the proposed activities.	In addition to using a vehicle for protection, this should be done using 1m high bollards caution tape and signage.	NR
11.	Place 2 x 9kg Dry Chem. fire extinguishers inside the WORK AREA	Fire extinguishers should have a current service stamp, a security pin in place and be placed at a location that takes prevailing wind conditions into account.	NR
12.	Undertake mechanical and electrical isolation of all equipment including fuel dispensers inside HAZARDOUS AREAS where hazardous or intrusive activities are being undertaken. This must be done prior to commencement of works	The standard required for isolation must render the equipment inside the HAZARDOUS AREA inoperable. Refer to <b>Equipment Isolation Certificate</b> for adequate isolation standards.	—
13.	Complete the attached Safe Work Procedure Checklist		NR



**SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

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## **AREA DEFINITIONS**

### **WORK AREA :**

- Radius from location of active works that provides adequate space to undertake the work safely. Nominally 5m.

### **HAZARDOUS ZONE :**

- 4m radius around fuel dispensers.
- 5m radius around LPG pump, tank and decant cylinders
- 4m radius around UST Dip/Fill points
- 1.5m radius around tank vents
- 1.5m radius around open wells.

### **CRITICAL ZONE :**

A detailed description of the critical zone can be referenced in the following document.

Global Remediation OIMS Manual  
System 3 – Design Practices / Project Management.

This includes

- 3m distance from all sub-surface electrical lines and gas supply lines.
- 3m distance from edge of tanks (including decommissioned tanks),
- 3m distance from operating dispenser islands and suspected underground lines and entire area between tank field and dispensers\*.

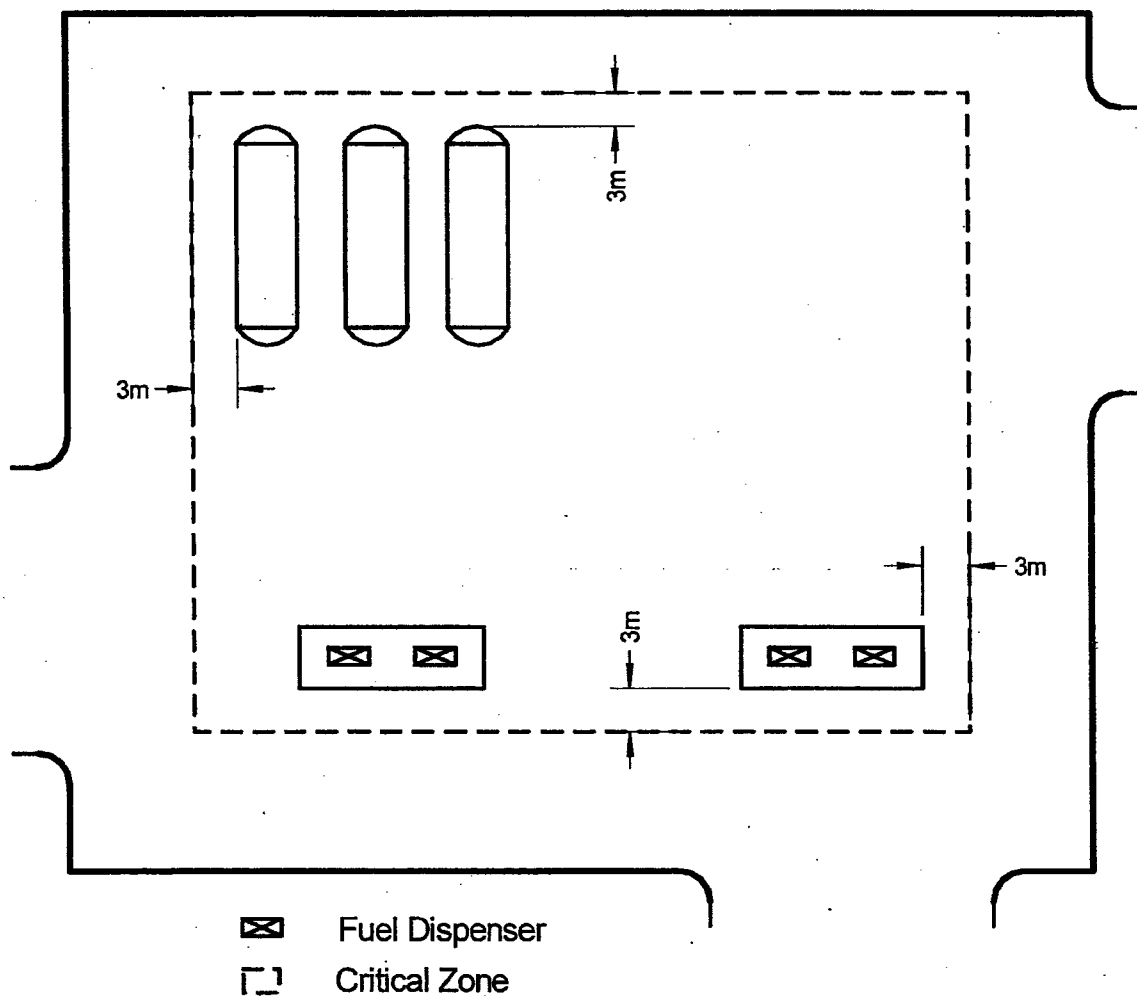
\*Refer to attached example of critical zone around fuel systems.

**SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

**Critical Zone Around Fuel Systems**

The following shows the Critical Zone on a typical service station fuel system



# URS

### SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

## SAFE WORK PERMIT – WORK PREPARATION CHECKLIST

**Complete this form before each day of site works.**

**HOT WORK:** is work which may create a spark with sufficient energy to ignite flammable gases or combustible dusts. This situation may arise due to the work being conducted or the equipment introduced to carry out the work and includes drilling.

**COLD WORK:** is work where there is no possibility of developing an ignition source anywhere within a Hazardous Area whether flammable gases are or are not present.

## Scope Of Work

Type of Proposed Activity	
<input type="checkbox"/> Cold Work	<p>AMS - Phase 8 sample MWØ1 - MWØ7. (As per HSEP)</p>
<input checked="" type="checkbox"/> Hot Work	
<input type="checkbox"/> Drilling	
<p><b>Note: This permit is not to be used for other activities such as excavation or tank removal.</b></p>	

Other Forms and Attachments	Reference Numbers
<input checked="" type="checkbox"/> AIP Form <input type="checkbox"/> URS HSEP <input type="checkbox"/> Other	..... ..... ..... .....

**URS****SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

**Hazard Identification**

The following hazard identification checklist must be completed before this permit can be issued.

Hazard Identification and Mitigation Checklist			
Exist Y/N	Hazards	Precautions/methods to control hazards	Initial when in place
Y	Flammable Vapour	RED/LOZ Monitoring	AK
N	Product (Liquids)		
N	Sludges Solids		
N	Sewers Drains		
N	Dust		
N	Services (below ground)		
N	Services (overhead)		
Y	Traffic	Hi Vis & secure work area	AK
Y	Gravity (what can fall)	GOOD HOUSEKEEPING	AK
Y	Inertia (what can move)		AK
Y	Slip/Trip Hazards		AK
Y	Manual Handling	SAFE LIFTING / Warm up	AK
N	Open excavations		
N	Heat		
N	Combustible rubbish		
N	Access Problems		
N	Other Site Activities		
Y	Other (Specify)	RATN - Be careful working in wet	AK





## SAFE WORK PROCEDURE &amp; PERMIT

**Safe Work Procedure & Permit-- Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Safe Work Procedure - Precautions

The following precautions must be taken when undertaking hazardous or intrusive activities on or off site.

	Action	Comments
1.	Before any drilling is commenced, the drilling checklist must be completed.	This is mandatory for each and every location.
2.	All unauthorised personnel must be excluded from the WORK AREA for the entire duration of work activities.	Unauthorised persons include anyone not directly associated with the work activities. If unauthorised persons are required to enter the WORK AREA, all work must cease until the area is cleared.
3.	All tools and plant must be kept inside the WORK AREA at all times.	Special care should be taken with placement of hoses etc. both inside and outside the WORK AREA. These can create significant trip hazards
4.	All necessary PPE as outlined in the HSEP must be worn during the identified work activities.	
5.	Constant LEL monitoring must be provided for all ignition sources. Undertake continuous LEL gas monitoring of atmosphere proximal to the hazardous equipment AT ALL TIMES with calibrated LEL Gas Detector. Check and record the Work Area every two hours.	The monitor must be operated in a location that takes into account the prevailing wind direction. The drill-rig and electrical equipment constitute potential IGNITION SOURCES. An IGNITION SOURCE within a HAZARDOUS ZONE = HOT WORK. Document LEL calibration and monitoring results on Gas / Vapour Test Certificate.
6.	During concrete coring ensure power leads and water hoses do not cross trafficable forecourt area;	All power leads must be tagged with a current safety compliance tag.
7.	Position mobile equipment inside WORK AREA Whenever a drilling rig or other large vehicle is required to travel in reverse, a spotter must be available while the vehicle is in motion.	During drill-rig setup, ensure all personnel are clear and in visual contact with the driver, all jacks are clear of surface infrastructure and there is no collision hazard with site infrastructure. Maintain safe working distance from overhead power lines - 3m radius for low voltage / 6m radius for high voltage.
8.	Maintain adequate work space inside WORK AREA.	Refer to item 10 in Section A
9.	All waste soil and groundwater must be stored in sealed and appropriately labelled drums.	Arrangements should be made for prompt use of drums



# URS

## SAFE WORK PROCEDURE & PERMIT

**Safe Work Procedure & Permit– Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

### Permit Validation

No works are to be commenced until this permit is signed by the site supervisor and all contractors. By signing this permit validation it is expected that all documentation is complete and all precautions are in place to undertake work in a manner that protects the safety of all site personnel and minimises the risk of damage to property and impacts to the environment.

Permit Validation	
The Site Supervisor must authorise the Safe Work Procedure & Permit before work commences.	
Permit authorisation period is from: <u>8am</u> am/pm Until: <u>1800</u> am/pm	
As site supervisor, I authorise the activities as outlined in the Scope Of Work to be undertaken and equipment listed to be used subject to the precautions and safety measures identified in this Safe Work Procedure & Permit.	
Date of Work:	<u>21/05/09</u>
URS Site Supervisor:	<u>NORM RONES</u>
Signature:	<u>[Signature]</u>

Print Name	Signature	Date
MICHAEL BROWN	<u>[Signature]</u>	21/5/2009
FRANK THOW	<u>F. Thow</u>	" " "





Issue No:

V11

Issue Date:

8<sup>th</sup> May 2008**URS****SAFE WORK PROCEDURE & PERMIT**

**Safe Work Procedure & Permit- Applicable for routine remediation and environmental activities conducted by URS on behalf of Mobil Oil Australia Pty Ltd under Services Outline Agreement (July 2002).**

**Work Completion Checklist**

At the completion of the days activities the following checks should be carried out

	Action	Comments	Complete
1.	All tools and equipment should be removed from the site		<i>NR</i>
2.	Reinstate surface of work area on completion of each days activities	Area must be resealed and the area dry swept where required.	<i>NR</i>
3.	All isolations put in place to commence the work must be removed.		<i>NR</i>
4.	All permits can now be signed off		<i>NR</i>

**Site Recommissioning Statement**

*The Site Supervisor must sign when excavation re-commissioning is complete.*

All activities at the site are complete. The site has been left in a clean and safe state and all isolations have been removed.

URS Site Supervisor:.....

Time:.....

Signature:.....

Issue No:

V10

Issue Date:

10<sup>th</sup> October 2007

Author

John Petersen - URS MEL

Reviewed By

Clive Hillier - Exxonmobil

Authorised By:

Jeff Smith - URS MEL

A







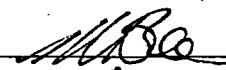

## Appendix A Induction Register

Project Title	Mobil Merimbula Post Phase 2 NO1063
Project Number	HSEP.01
Date Prepared / Issued	5/05/2009

I have read and understand the contents of this Health, Safety and Environment Plan and hereby agree to abide by its provisions and follow the directions of the person in control of the works.

URS Site Supervisor 

I understand that it is in my best interest to see that site operations are conducted in the safest manner possible; therefore, I will be alert to site health, safety and environmental conditions at all times. I also understand I have authority to stop the work if I become aware of an unsafe condition or unsafe act.

Name	Company	Signature	Date
DANIEL CRITCHIE	DALOS		13-5-09
PRAG MEHAM	DIGSMART		13-5-09
RON BOY	CONDRIE		13-5-09
Shane Barnes	MAC DRILL		14-5-9
Craig Emme	Mac Drill		14-5-9
NORM ROVLS	URS		21/5/09
WICK BROWN	Caddey Seal Tarmen		21/5/09
FRANK THOW	" " "		21/5/09

URS

**URS****Daily Calibration Sheet**

Date

13/05/09

Job Name:

Merrimub

Job Number:

42424195

Field Staff:

L. Alexander

Project Manager:

T DWS

Weather:

Clear, cool

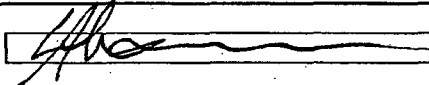
ITEM	PID	Explosimeter	Acidity		Conductivity	RedOx	DO	Benzene
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	
Model	MULTI2AE	MULTI2AE-M						
Serial Number	080-001154	080-001154						
Calibration Standard	Isobutylene	CH4						
Concentration	100 ppm	50 %						
Calibration Reading	101 ppm	49 %						
Calibration Time	0730	0735						
Comments	OK	OK						

## Checks

Time	10.40	10.50						
Reading	99.4	50 %						
Comment	OK	OK						
Time								
Reading								
Comment								
Time								
Reading								
Comment								

## Notes


Field Staff Signature:





**URS****Daily Calibration Sheet**

Date

14/5/09

Job Name:

Merrimbury

Job Number:

42424195

Field Staff:

L. Alexander

Project Manager:

T. Ows

Weather:

Clear, cool.

ITEM	PID	Explosimeter	Acidity		Conductivity	RedOx	DO	Benzene
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	
Model	MultirAE-1R	MultirAE-1R						
Serial Number	080-001154	080-001154						
Calibration Standard	Isobutylene	C14						
Concentration	100 ppm	50%						
Calibration Reading	99.2	50%						
Calibration Time	0740	0745						
Comments	OK	OK						

## Checks

Time	11.00	11.00						
Reading	98.9	50%						
Comment	OK	OK.						
Time								
Reading								
Comment								
Time								
Reading								
Comment								

## Notes


Field Staff Signature:



**URS****Daily Calibration Sheet**Date: 2/15/01 Job Name: Mobil SS Metimbu Job Number: Field Staff: NIR Project Manager: T. OMUSWeather: RASHLYN 21.5

ITEM	PID	Explosimeter	Acidity		Conductivity	RedOx	DO	Benzene
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	
Model	<u>PIDMEX KQRAE ST</u>	<u>4</u>			<u>1213</u>			
Serial Number	<u>-</u>	<u>-</u>						
Calibration Standard	<u>Isobutylene Metime</u>					<u>2.6</u>		
Concentration	<u>100</u>	<u>50</u>						
Calibration Reading	<u>9.99</u>	<u>8.99</u>						
Calibration Time	<u>9.05</u>	<u>9.10</u>	<u>9.10</u>		<u>9.10</u>			
Comments	<u>OK</u>	<u>OK</u>						

**Checks**

Time								
Reading								
Comment								
Time								
Reading								
Comment								
Time								
Reading								
Comment								

**Notes**
Field Staff Signature: NIR

2/15/01 12:35  
2/15/01 12:35

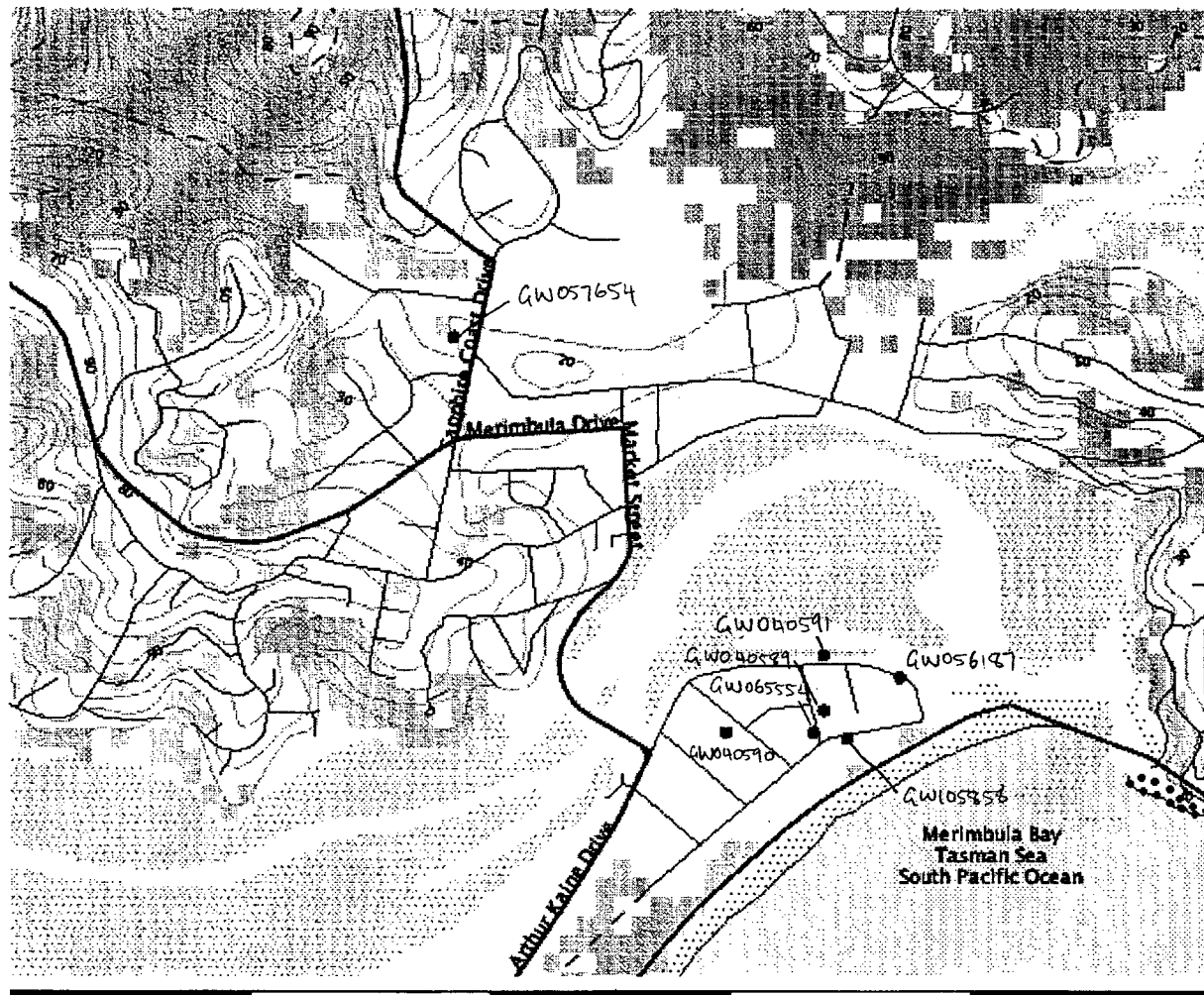
## Appendix B Registered Bore Information

**URS**

# Merimbula

Map created with NSW Natural Resource Atlas - <http://nratlas.nsw.gov.au>

Wednesday, June 03, 2009



0

2 Km

## Legend

Symbol

Layer

Custodian



Cities and large towns renderImage:  
Cannot build image from features



Populated places renderImage: Cannot  
build image from features



Towns



Groundwater Bores

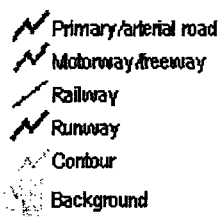


Catchment Management Authority  
boundaries



Major rivers

Topographic base map



Copyright © 2009 New South Wales Government. Map has been compiled from various sources and may contain errors or omissions. No representation is made as to its accuracy or suitability.

# Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)  
Document Generated on Wednesday, June 3, 2009

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

## Work Requested -- GW057654

### Works Details ([top](#))

GROUNDWATER NUMBER GW057654  
LIC-NUM 10BL126354  
AUTHORISED-PURPOSES DOMESTIC  
INTENDED-PURPOSES DOMESTIC  
WORK-TYPE Bore  
WORK-STATUS (Unknown)  
CONSTRUCTION-METHOD Rotary  
OWNER-TYPE Private  
COMMENCE-DATE  
COMPLETION-DATE 1983-01-01  
FINAL-DEPTH (metres) 15.00  
DRILLED-DEPTH (metres) 0.00  
CONTRACTOR-NAME  
DRILLER-NAME  
PROPERTY N/A  
GWMA -  
GW-ZONE -  
STANDING-WATER-LEVEL  
SALINITY  
YIELD

### Site Details ([top](#))

REGION 10 - SYDNEY SOUTH COAST  
RIVER-BASIN 220 - TOWAMBA RIVER  
AREA-DISTRICT  
CMA-MAP 8824-2S  
GRID-ZONE 55/3  
SCALE 1:25,000  
ELEVATION  
ELEVATION-SOURCE (Unknown)  
NORTHING 5913898.00  
EASTING 759003.00  
LATITUDE 36 53' 7"  
LONGITUDE 149 54' 22"  
GS-MAP 0089D4



AMG-ZONE 55  
COORD-SOURCE GD.,ACC.MAP  
REMARK

**Form-A (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP 63

**Licensed (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP 63

**Construction (top)**

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;  
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL DETAIL
1	1	Casing	Threaded Steel	0.00	0.00	150		(Unknown)

**Water Bearing Zones (top)**

no details

**Drillers Log (top)**

no details

---

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

# Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)  
Document Generated on Wednesday, June 3, 2009

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

## Work Requested -- GW040590

### Works Details [\(top\)](#)

GROUNDWATER NUMBER GW040590  
LIC-NUM  
AUTHORISED-PURPOSES  
INTENDED-PURPOSES NOT KNOWN  
WORK-TYPE Spear  
WORK-STATUS (Unknown)  
CONSTRUCTION-METHOD (Unknown)  
OWNER-TYPE Private  
COMMENCE-DATE  
COMPLETION-DATE  
FINAL-DEPTH (metres) 5.50  
DRILLED-DEPTH (metres) 5.50  
CONTRACTOR-NAME  
DRILLER-NAME  
PROPERTY  
GWMA  
GW-ZONE  
STANDING-WATER-LEVEL  
SALINITY  
YIELD

### Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST  
RIVER-BASIN 220 - TOWAMBA RIVER  
AREA-DISTRICT  
CMA-MAP 8824-2S  
GRID-ZONE 55/3  
SCALE 1:25,000  
ELEVATION  
ELEVATION-SOURCE (Unknown)  
NORTHING 5912769.00  
EASTING 759588.00  
LATITUDE 36 53' 43"  
LONGITUDE 149 54' 47"  
GS-MAP 0089D4

AMG-ZONE 55  
COORD-SOURCE GD.,ACC.MAP  
REMARK

**Form-A (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP RES 10

**Licensed (top)**

no details

**Water Bearing Zones (top)**

no details

**Drillers Log (top)**

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	5.50	5.50	Sand Beach	Water Bearing	

---

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

# Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)  
Document Generated on Wednesday, June 3, 2009

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

## Work Requested -- GW065554

### Works Details [\(top\)](#)

GROUNDWATER NUMBER GW065554

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES DOMESTIC

WORK-TYPE Spear

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD Auger

OWNER-TYPE Private

COMMENCE-DATE

COMPLETION-DATE 1988-05-27

FINAL-DEPTH (metres) 6.70

DRILLED-DEPTH (metres) 0.00

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

### Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST

RIVER-BASIN 220 - TOWAMBA RIVER

AREA-DISTRICT

CMA-MAP 8824-2S

GRID-ZONE 55/3

SCALE 1:25,000

ELEVATION

ELEVATION-SOURCE

NORTHING 5912763.00

EASTING 759786.00

LATITUDE 36 53' 43"

LONGITUDE 149 54' 55"

GS-MAP 0089D4

AMG-ZONE 55  
 COORD-SOURCE  
 REMARK

**Form-A (top)**

COUNTY AUCKLAND  
 PARISH PAMBULA  
 PORTION-LOT-DP RES 10

**Licensed (top)**

no details

**Construction (top)**

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;  
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	P.V.C.	0.10	6.30	29			
1	1	Opening	Screen	6.10	6.70	56		1	Surescreen; Stainless Steel; SL: 0mm; A: .15mm

**Water Bearing Zones (top)**

FROM- DEPTH (metres)	TO- DEPTH (metres)	THICKNESS (metres)	ROCK-CAT- DESC	S- W-L	D- D- L	YIELD	TEST- HOLE- DEPTH (metres)	DURATION	SALINITY
4.20	6.70	2.50	Unconsolidated	4.20		0.75			0-500 ppm

**Drillers Log (top)**

no details

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# Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)  
Document Generated on Wednesday, June 3, 2009

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

## Work Requested -- GW040589

### Works Details [\(top\)](#)

GROUNDWATER NUMBER GW040589

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES NOT KNOWN

WORK-TYPE (Unknown)

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD (Unknown)

OWNER-TYPE Private

COMMENCE-DATE

COMPLETION-DATE

FINAL-DEPTH (metres) 4.90

DRILLED-DEPTH (metres) 4.90

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

### Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST

RIVER-BASIN 220 - TOWAMBA RIVER

AREA-DISTRICT

CMA-MAP 8824-2S

GRID-ZONE 55/3

SCALE 1:25,000

ELEVATION

ELEVATION-SOURCE (Unknown)

NORTHING 5912824.00

EASTING 759813.00

LATITUDE 36 53' 41"

LONGITUDE 149 54' 56"

GS-MAP 0089D4

AMG-ZONE 55  
COORD-SOURCE GD.,ACC.MAP  
REMARK

**Form-A (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP RES 10

**Licensed (top)**

no details

**Water Bearing Zones (top)**

no details

**Drillers Log (top)**

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	4.90	4.90	Sand Beach	Water Bearing	

---

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# Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)  
Document Generated on Wednesday, June 3, 2009

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

## Work Requested -- GW105858

### Works Details [\(top\)](#)

GROUNDWATER NUMBER GW105858  
LIC-NUM 10BL163266  
AUTHORISED-PURPOSES DOMESTIC  
INTENDED-PURPOSES  
WORK-TYPE Bore  
WORK-STATUS  
CONSTRUCTION-METHOD  
OWNER-TYPE  
COMMENCE-DATE  
COMPLETION-DATE 2005-05-04  
FINAL-DEPTH (metres)  
DRILLED-DEPTH (metres)  
CONTRACTOR-NAME  
DRILLER-NAME  
PROPERTY BILLINGS  
GWMA -  
GW-ZONE -  
STANDING-WATER-LEVEL  
SALINITY  
YIELD

### Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST  
RIVER-BASIN 220 - TOWAMBA RIVER  
AREA-DISTRICT  
CMA-MAP 8824-2S  
GRID-ZONE 55/3  
SCALE 1:25,000  
ELEVATION  
ELEVATION-SOURCE (Unknown)  
NORTHING 5912743.00  
EASTING 759862.00  
LATITUDE 36 53' 44"  
LONGITUDE 149 54' 58"  
GS-MAP

AMG-ZONE 55  
COORD-SOURCE  
REMARK

**Form-A (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP 255 750227

**Licensed (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP 255 750227

**Water Bearing Zones (top)**

no details

**Drillers Log (top)**

no details

---

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# Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)  
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[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

## Work Requested -- GW040591

### Works Details [\(top\)](#)

GROUNDWATER NUMBER GW040591

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES NOT KNOWN

WORK-TYPE (Unknown)

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD (Unknown)

OWNER-TYPE Private

COMMENCE-DATE

COMPLETION-DATE

FINAL-DEPTH (metres) 2.50

DRILLED-DEPTH (metres) 2.50

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

### Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST

RIVER-BASIN 220 - TOWAMBA RIVER

AREA-DISTRICT

CMA-MAP 8824-2S

GRID-ZONE 55/3

SCALE 1:25,000

ELEVATION

ELEVATION-SOURCE (Unknown)

NORTHING 5912978.00

EASTING 759818.00

LATITUDE 36 53' 36"

LONGITUDE 149 54' 56"

GS-MAP 0089D4

AMG-ZONE 55  
COORD-SOURCE GD.,ACC.MAP  
REMARK

**Form-A (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP RES 10

**Licensed (top)**

no details

**Water Bearing Zones (top)**

no details

**Drillers Log (top)**

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.50	2.50	Sand Beach	Water Bearing	

---

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# Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)  
Document Generated on Wednesday, June 3, 2009

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

## Work Requested -- GW056187

### Works Details [\(top\)](#)

GROUNDWATER NUMBER GW056187  
LIC-NUM 10BL122393  
AUTHORISED-PURPOSES DOMESTIC  
INTENDED-PURPOSES NOT KNOWN  
WORK-TYPE Well  
WORK-STATUS Supply Obtained  
CONSTRUCTION-METHOD (Unknown)  
OWNER-TYPE Private  
COMMENCE-DATE  
COMPLETION-DATE 1960-01-01  
FINAL-DEPTH (metres) 3.00  
DRILLED-DEPTH (metres) 3.10  
CONTRACTOR-NAME  
DRILLER-NAME  
PROPERTY N/A  
GWMA -  
GW-ZONE -  
STANDING-WATER-LEVEL  
SALINITY  
YIELD

### Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST  
RIVER-BASIN 220 - TOWAMBA RIVER  
AREA-DISTRICT  
CMA-MAP 8824-2S  
GRID-ZONE 55/3  
SCALE 1:25,000  
ELEVATION  
ELEVATION-SOURCE (Unknown)  
NORTHING 5912911.00  
EASTING 759989.00  
LATITUDE 36 53' 38"  
LONGITUDE 149 55' 3"  
GS-MAP 0089D4

AMG-ZONE 55  
COORD-SOURCE GD.,ACC.MAP  
REMARK

**Form-A (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP L1 (RES 10)

**Licensed (top)**

COUNTY AUCKLAND  
PARISH PAMBULA  
PORTION-LOT-DP L1

**Construction (top)**

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;  
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL DETAIL
1	1	Casing	Brick	-0.20	-0.20	914		(Unknown)

**Water Bearing Zones (top)**

no details

**Drillers Log (top)**

FROM	TO	THICKNESS	DESC	GEO-MATERIAL COMMENT
0.00	3.05	3.05	Sand Water Bearing	

---

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## Appendix C Underground Service Plans





## Enquiry Confirmation

Job No. 3359232

PO Box 7710  
Melbourne VIC 8004  
Phone: 1100  
Fax: 1300 652 077

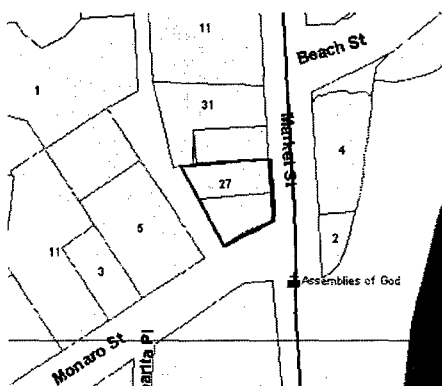
To: Mr Thomas Onus  
Company: URS  
Address: Level 3 116 Miller St  
North Sydney NSW 2060

Caller ID: 602816  
Phone: 0289255759  
Mobile: 0408665517  
Fax No: 0289255555  
Email: thomas\_onus@urscorp.com

### Dig Site Details

www.dialbeforeyoudig.com.au

**Warning:** The map below only displays the location of the proposed dig site and does not display any asset owner's pipes or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly. Asset owners aim to provide you with details of their assets within 2 working days.



Enquiry Date: 05/05/2009 4:17:41 PM  
Start Date: 13/05/2009  
Address: Monaro Street  
Merimbula NSW 2548  
Intersection: Market ST

- Check that the location of the dig site is correct. If not you MUST submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Map Ref: Penguin 376D9

Additional work site information:

DBYD State Message: Visit our new Web site - [www.dialbeforeyoudig.com.au](http://www.dialbeforeyoudig.com.au) ((NSW))

### Your Responsibilities and Duty of Care

www.dialbeforeyoudig.com.au

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to the terms and disclaimers set out at [www.dialbeforeyoudig.com.au](http://www.dialbeforeyoudig.com.au).
- For more information on safe excavation practices, visit [www.dialbeforeyoudig.com.au](http://www.dialbeforeyoudig.com.au)

### Asset Owner Details

www.dialbeforeyoudig.com.au

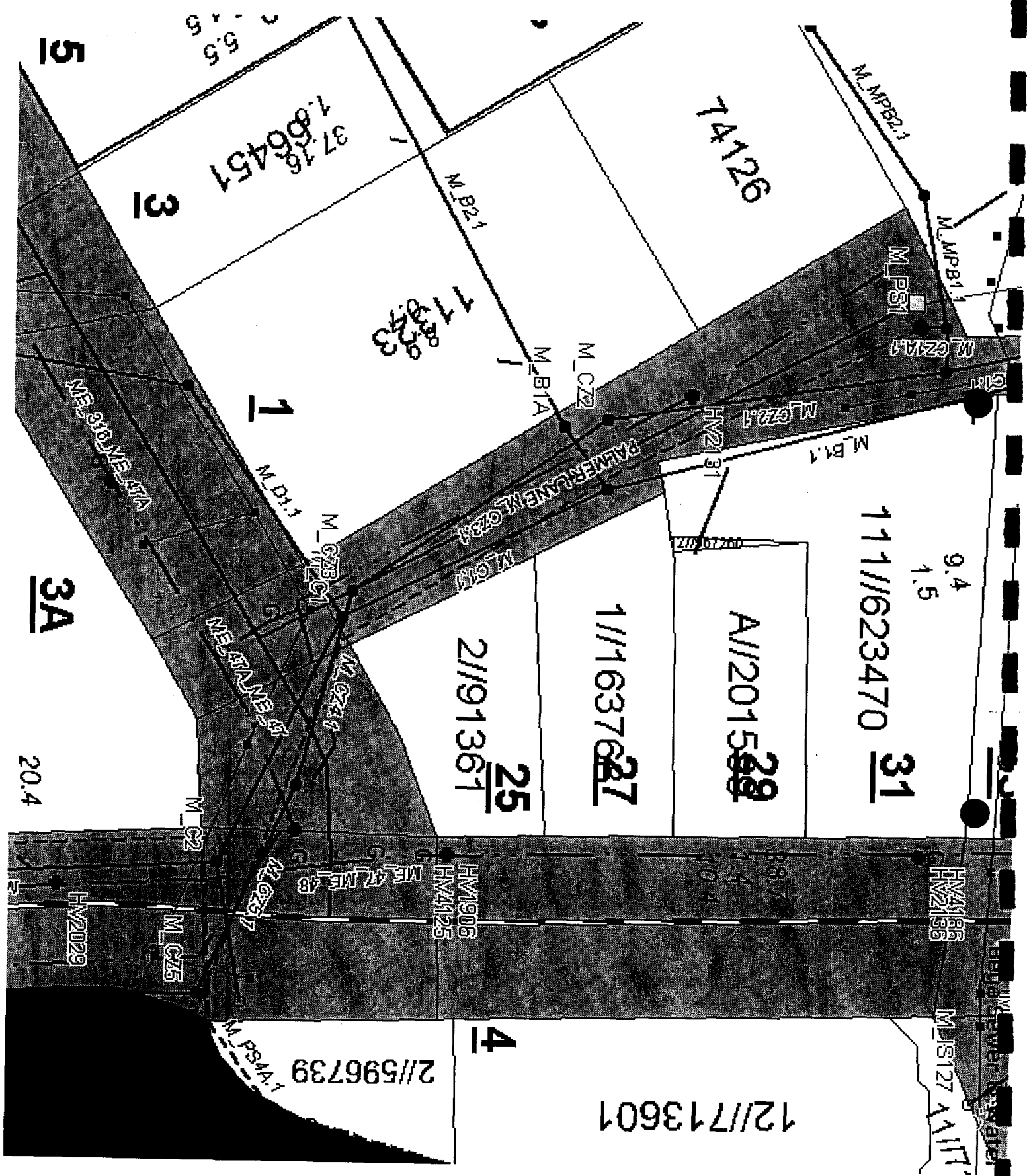
The asset owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post.

Seq No.	Asset Owner	Contact No	Notification Status
15817718	Bega Valley Shire Council	0264992259	Notified
15817719	Roads & Traffic Authority #	0288370890	Notified
15817720	Telstra, South Coast (s)	1800114918	Notified

\*\* Asset owners highlighted by asterisks \*\* require that you visit their offices to collect plans.

# Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

LODGE YOUR FREE ENQUIRY ONLINE - 24 HOURS A DAY, SEVEN DAYS A WEEK



1111623470 31

A/1201529

1/11637627

2/191361 25

12/1713601

2/596739

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1.5

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1.866451

17.89  
8.43

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HV4186

MJS127 1117'

HV1906  
HV4125

ME 47 ME 48  
ME 42 ME 47

M\_C25

M\_C2

NE 4TH AVE  
NE 3RD AVE

M.D.1

M\_C24

M\_C23

M\_C21

M\_C20

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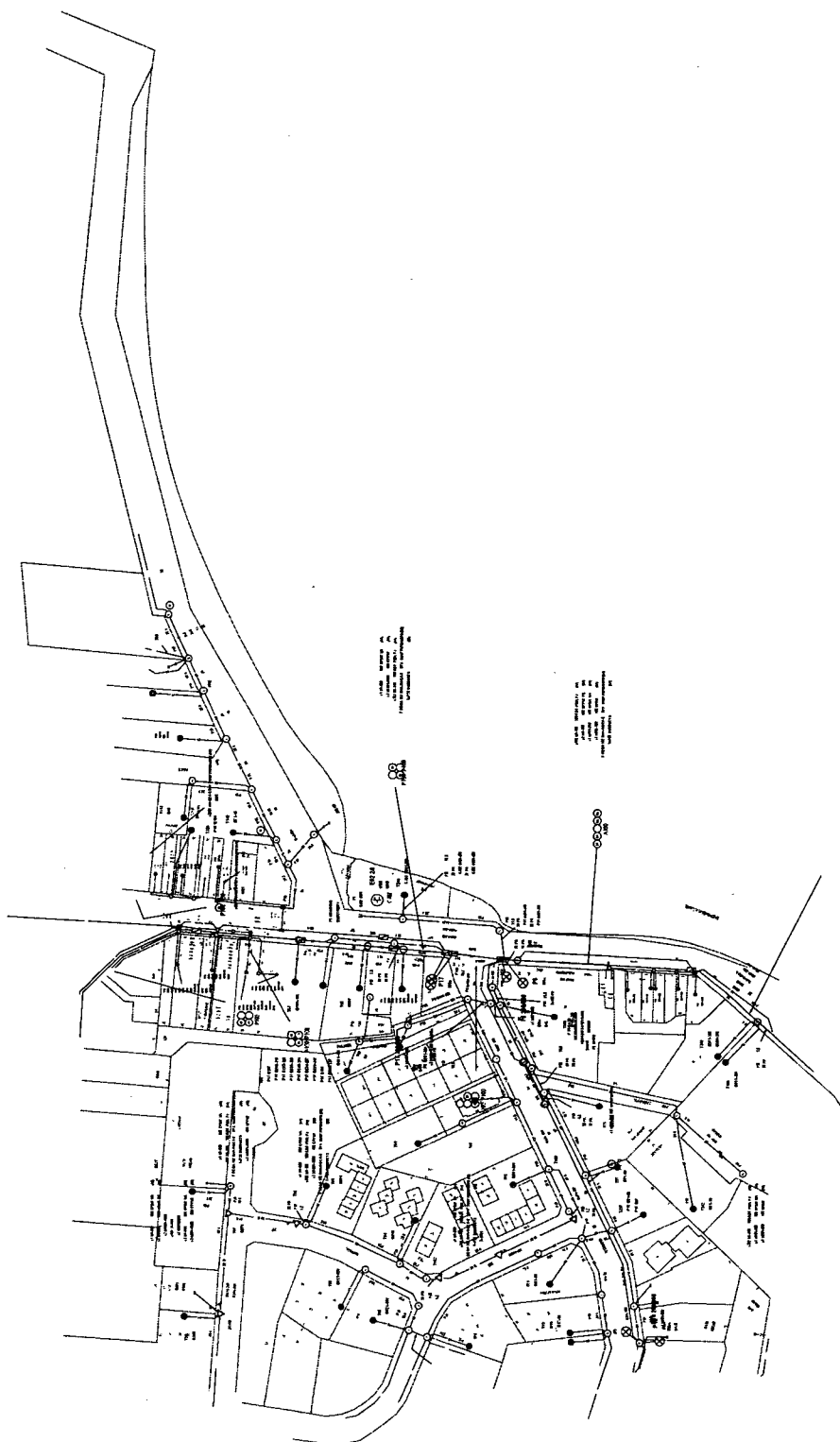
M\_C-289

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**Accredited Plant Locaters:**

Name and Address	Phone Number	Ask for:
Bedrock Bobcat & Excavation Pty Ltd - Minnamurra	Ph: 02 42375659 Fax: 02 4237 8029 Mob: 0418 645 391	Darren Peacock
Commercial & industrial Earthing ( Ulladulla )	02 4457 1217 or 0414 890 615	Phillip Matthews
D & V Communications Pty Ltd - Bega	Ph: 02 64947821 Mob: 0428 523 783	Vic Tacilauskas
Excavac Potholing - Appin	Mob: 0414 521 808 Fax: 02 4631 1450	Peter Lawrence
Gary Laneyrie Electrical Contractor ( Wollongong )	02 4262 8166	Gary Laneyrie
Kerr Technologies (Wollongong )	0417 622 009 or 42 622 009	Robert Kerr
Mocean Fabrications ( Bega, Snowy Mountains, Batemans Bay )	02 64944955 or 0418329370	Mark Broadbent
National Cable Locations ( Canberra )	02 6292 0867 or 0415 158 474	Michael Matthews
S & K O'Malley Communications - Bawley Point	Ph: 02 44571258 Fax: 02 44571258 Mob: 0427 975 777	Scott O'Malley



## DUTY OF CARE

The Telstra logo, consisting of the word "Telstra" in a white, sans-serif font on a black rectangular background.

Telstra Corporation Limited

### IMPORTANT:

- Please read and understand all the information and disclaimers provided below.
- Sketches and Plans provided by Telstra are circuit diagrams only and indicate the presence of telecommunications plant in the general vicinity of the geographical area shown; exact ground cover and alignments cannot be given with any certainty and cover may alter over time. Telecommunications plant seldom follow straight lines and careful on site investigation is essential to uncover and reveal its exact position.
- Due to the nature of Telstra plant and the age of some cables and records, it is impossible to ascertain the location of all Telstra plant. The accuracy and/or completeness of the information can not be guaranteed and, accordingly Telstra plans are intended to be indicative only.

### "DUTY OF CARE"

When working in the vicinity of telecommunications plant you have a legal "Duty of Care" that must be observed. The following points must be considered:-

1. It is the responsibility of the owner and any consultant engaged by the owner, including an architect, consulting engineer, developer, and head contractor to design for minimal impact and protection of Telstra plant. Telstra will provide plans and sketches showing the presence of its network to assist at this design stage.
2. It is the owner's (or constructor's) responsibility to:-

a) Request plans of Telstra plant for a particular location at a reasonable time before construction begins.

b) Visually locate Telstra plant by hand digging (pot-holing) where construction activities may damage or interfere with Telstra plant (see "Essential Precautions and Approach Distances" section for more information).

c) Contact Telstra's **Network Integrity Group** (see below for details) if Telstra plant is wholly or partly located near planned construction activities.

### DAMAGE:

**ANY DAMAGE TO TELSTRA'S NETWORK MUST BE REPORTED TO 132203 IMMEDIATELY.**

- The owner is responsible for all plant damage when works commence prior to obtaining Telstra plans, or failure to follow agreed instructions.
- Telstra reserves all rights to recover compensation for loss or damage to its cable network or other property including consequential losses.

### CONCERNING TELSTRA PLANS:

- **Phone 1100 - Dial Before You Dig** for plans of Telstra plant locations. Please give at least 2 business days notice.
- Telstra plans and information provided are **valid for 60 days** from the date of issue.
- Telstra owns and retains the copyright in all plans and details provided in conjunction with the applicant's request. The applicant is authorised to use the plans and details only for the purpose indicated in the applicant's request. The applicant must not use the plans or details for any other purpose. The plans and details should be disposed of by shredding or any other secure disposal method after use.
- Telstra plans or other details are provided only for the use of the applicant, its servants, or agents. **The applicant may not give the plans or details to other parties, and may not generate profit from commercialising the plans or details.**
- Please contact the **Network Integrity Help Desk** (see below for details) immediately should you locate Telstra assets not indicated on these plans.
- Telstra, its servants or agents shall not be liable for any loss or damage caused or occasioned by the use of plans and or details so supplied to the applicant, its servants and agents, and the applicant agrees to indemnify Telstra against any claim or demand for any such loss or damage.
- Please ensure Telstra plans and information provided remains on-site at all times throughout your construction phase.

### ESSENTIAL PRECAUTIONS and APPROACH DISTANCES:

**NOTE:** If the following clearances cannot be maintained, please contact the Network Integrity Help Desk (see below for details)

for advice on how best to resolve this situation.

1. On receipt of plans and sketches and before commencing excavation work or similar activities near Telstra's plant, **carefully locate this plant first** to avoid damage. Undertake prior manual exposure such as potholing when intending to excavate or work **closer** to Telstra plant than the following approach distances.

- Where Telstra's plant is in an area where road and footpaths are well defined by kerbs or other features a minimum clear distance of 600mm must be maintained from where it could be reasonably presumed that plant would reside.
- In non established or unformed reserves and terrain, this approach distance must be at least 1.5 metres.
- In country/rural areas which may have wider variations in reasonably presumed plant presence, the following minimum approach distances apply:
  - a) Parallel to major plant: 10 metres (for IEN, optic fibre and copper cable over 300 pairs)
  - b) Parallel to other plant: 5 metres
- Note: Even manual pot-holing needs to be undertaken with extreme care, commonsense and employing techniques least likely to damage cables. For example, orientate shovel blades and trowels parallel to the cable rather than digging across the cable.
- If construction work is parallel to Telstra plant, then careful hand digging (pot-holing) at least every 5m is required to establish the location of all plant, hence confirming nominal locations before work can commence.

2. Maintain the following minimum clearance between construction activity and **actual location** of Telstra Plant.

<b>Jackhammers/Pneumatic Breakers</b>	<i>Not within 1.0m of actual location.</i>
<b>Vibrating Plate or Wacker Packer Compactor</b>	<i>Not within 0.5m of Telstra ducts. 300mm compact clearance cover before compactor can be used across Telstra ducts.</i>
<b>Boring Equipment (in-line, horizontal and vertical)</b>	<i>Not within 2.0m of actual location. Constructor to hand dig (pot-hole) and expose plant.</i>
<b>Heavy Vehicle Traffic (over 3 tonnes)</b>	<i>Not to be driven across Telstra ducts (or plant) with less than 600mm cover. Constructor to check depth via hand digging.</i>
<b>Mechanical Excavators, Boring and Tree Removal</b>	<i>Not within 1.0m of actual location. Constructor to hand dig (pot-hole) and expose plant.</i>

- All Telstra pits and manholes should be a minimum of 1.2m in from the back of kerb after the completion of your work.
- All Telstra conduit should have the following minimum depth of cover after the completion of your work:-
  - **Footway 450mm**
  - **Roadway 450mm at drain invert and 600mm at road centre crown**
- For clearance distances relating to Telstra pillars, cabinets and RIMs/RCMs please contact the Network Integrity Help Desk (see below for details).

## **FURTHER ASSISTANCE:**

Over-the-phone assistance can be obtained by calling the **Network Integrity Help Desk**.

Where on-site location is provided, the owner is responsible for all hand digging (pot-holing) to visually locate and expose Telstra plant.

If plant location plans or visual location of Telstra plant by digging reveals that the location of Telstra plant is situated wholly or partly where the owner plans to work, then **Telstra's Network Integrity Group** must be contacted through the **Network Integrity Help Desk** to discuss possible engineering solutions.

## **NOTE:**

If Telstra relocation or protection works are part of the agreed solution, then payment to Telstra for the cost of this work shall be the responsibility of the principal developer or constructor. The principal developer or constructor will be required to provide Telstra with the details of their proposed work showing how Telstra's plant is to be accommodated and these details must be approved by the Regional Network Integrity Manager prior to the commencement of site works.

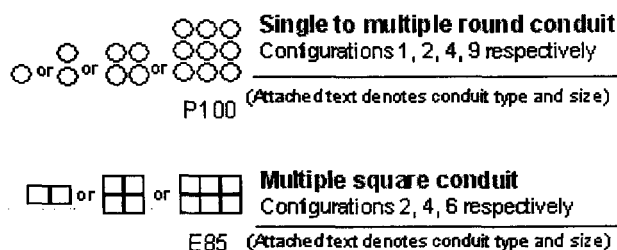
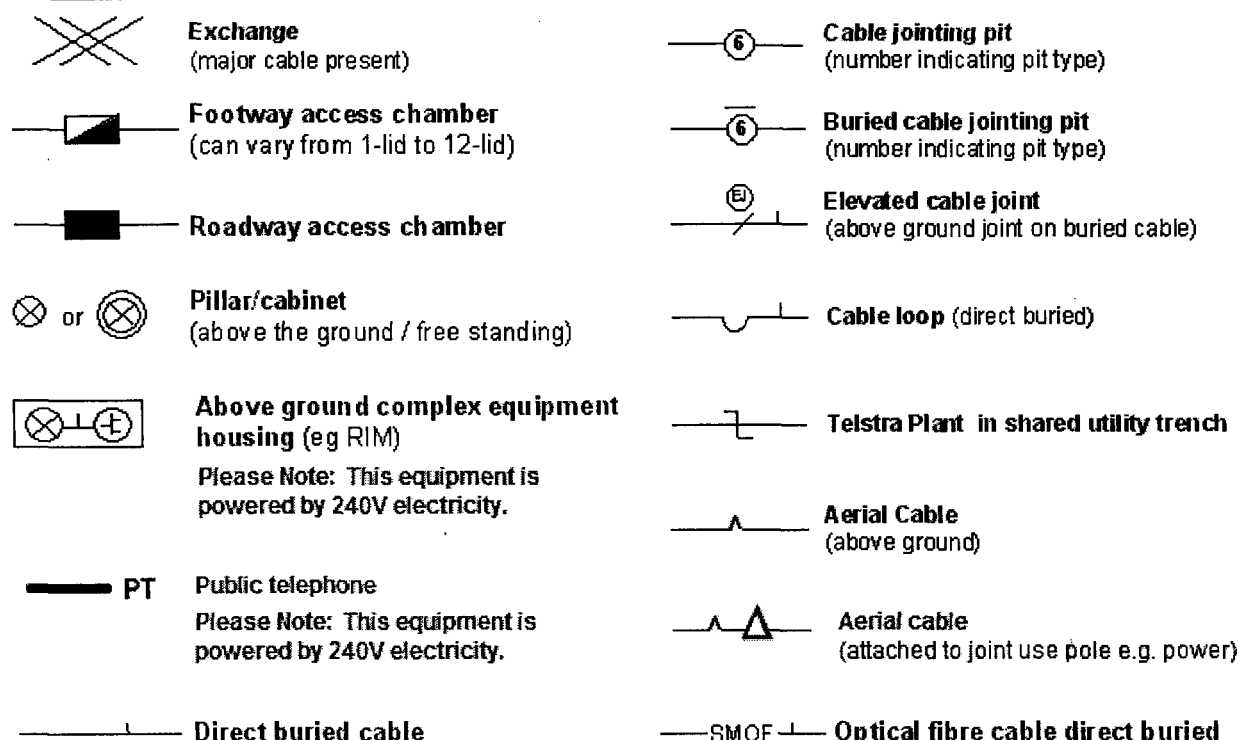
## **RURAL LANDOWNERS - IMPORTANT INFORMATION**

Where Telstra owned cable crosses agricultural land, Telstra will provide a one off free on-site electronic cable location. Please note that the exact location of cables can only be verified by visual proving by pot holing, which is not covered by this service. The Network Integrity Helpdesk Officer will provide assistance in determining whether a free on-site location is required. Please ring the Network Integrity Helpdesk Officer as listed above.

## **PRIVACY NOTE**

## A GUIDE TO READING **Telstra** PLANS

Telstra Corporation Limited  
ABN 33 051775 556

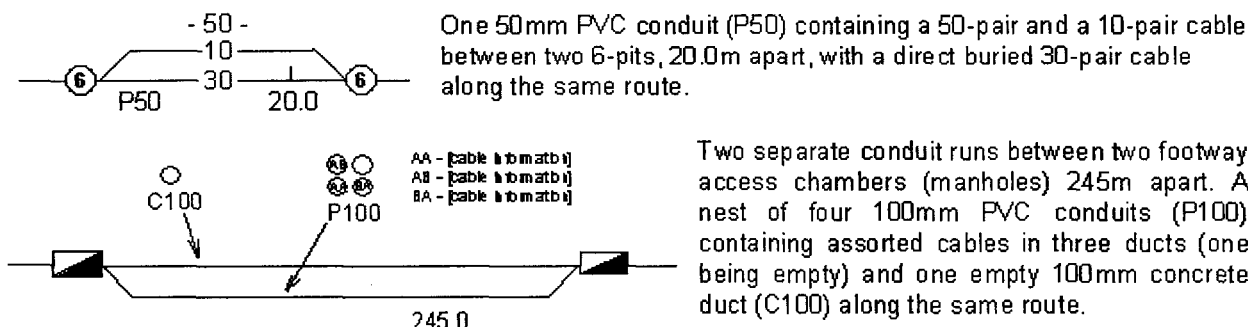


### Some examples of conduit type and size:

A - Asbestos cement, P - PVC / plastic, C - Concrete, GI - Galvanised iron, E - Earthenware.  
Conduit sizes *nominally* range from 20mm to 100mm.

P50 50mm PVC conduit  
P100 100mm PVC conduit  
A100 100mm asbestos cement conduit  
E 85 85mm square earthenware conduit

## Some examples of how to read Telstra plans:



**WARNING:** Telstra's plans show only the presence of cables and plant. They only show their position relative to road boundaries, property fences etc. at the time of installation and Telstra does not warrant or hold out that such plans are accurate thereafter due to changes that may occur over time.

DO NOT ASSUME DEPTH OR ALIGNMENT of cables or plant as these vary significantly.

The customer has a DUTY OF CARE when excavating near Telstra cables and plant. Before using machine excavators TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG (potholing) to identify its location.

Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

### ACCREDITED PLANT LOCATERS (For your area)

On-site assistance should be sought from an **Accredited Plant Locator** if the telecommunications plant cannot be located within 2.5



metres of the locations indicated on the drawings provided.

On-site advice should be obtained from a suitably qualified contractor highly skilled in locating Telstra plant if there is any doubt whatsoever about the actual location of the telecommunications plant, the best method for locating the telecommunications plant or the correct interpretation of the drawings provided. In the case where Telstra plant is outside a recognised road reserve Telstra recommends that the **Network Integrity Help Desk** is contacted for assistance prior to engaging an Accredited Plant Locator.

For the assistance of customers Telstra has established strict criteria to assess the skill of contractors that may be engaged by owners requiring Telstra plan locating services to perform any of the following activities if requested to do so by the owner:

- review Telstra's plans to assess the approximate location of Telstra plant;
- advise owners of the approximate location of Telstra plant according to the plans;
- advise owners of the best method for locating Telstra plant;
- advise owners of the hazards of unqualified persons attempting to find the exact location of Telstra plant and working in the vicinity of Telstra plant without first locating its exact position.
- perform trial hole explorations by hand digging (pot-holing) to expose Telstra plant with a high degree of skill, competence and efficiency and utilising all necessary safety equipment.

Telstra has provided a number of contractors with certification as an Accredited Plant Locator.

**A list of Accredited Plant Locaters operating in your area is attached. Accredited Plant Locaters are certified by Telstra to perform the tasks listed above. Owners may engage Accredited Plant Locaters to perform these services, however Telstra does not give any warranty in relation to these services that Accredited Plant Locaters are competent or experienced to perform any other services.**

The attached list provides the names and contact details for Accredited Plant Locaters who service your area and can provide you with assistance in locating Telstra plant on site. These organisations have been able to satisfy Telstra that they have a sound knowledge of telecommunications plant and its sensitivity to disturbance; appropriate equipment for locating telecommunications plant and competent personnel who are able to interpret telecommunications plans and sketches and understand safety issues relevant to working around telecommunications plant. They are also able to advise you on the actions which should be taken if the work you propose will/could result in a relocation of the telecommunications plant and/or its means of support.

We recommend that you engage the assistance of one of these Accredited Plant Locaters as a step towards discharging your Duty of Care obligations when seeking the location of Telstra's telecommunications plant.

**Please Note:**

1. The details of any contract, agreement or retainer for site assistance to locate telecommunications plant shall be for you to decide and agree with the organisation engaged. Telstra is not a party to any contract entered into between an owner and an Accredited Plant Locator. The Accredited Plant Locaters are able to provide guidance concerning the extent of site investigations required.
2. Payment for the site assistance will be your responsibility and payment details should be agreed before the engagement is confirmed.
3. Telstra does not accept any liability or responsibility for the performance of or advice given by an Accredited Plant Locator. Accreditation is an initiative taken by Telstra towards the establishment and maintenance of competency standards. However, performance and the advice given will always depend on the nature of the individual engagement.
4. Each Accredited Plant Locator has been issued with a certificate which confirms the Accreditation. Each year Telstra will reassess the accreditation and where appropriate will issue a letter confirming the accreditation for the next calendar year. You have the right to request the organisation you engage to show evidence of this certificate and its currency.
5. The Accredited Plant Locator is required to service each engagement with the personal attendance of at least one accredited employee who has satisfactorily completed a Telstra approved employee accreditation training course. These people will carry a certification card issued by Telstra.
6. Neither the Accredited Plant Locator nor any of its employees are an employee or agent for Telstra and Telstra is not liable for any damage or loss caused by the Accredited Plant Locator or its employees.
7. The attached list contains the current names and contact details of Accredited Plant Locaters who service your area, however, these details are subject to change.

## Appendix D Soil and Groundwater Bore Information



NSW Government

Department of Water & Energy

Mobil Oil Australia Pty Limited  
C/- URS Australia Pty Ltd  
Level 3, 116 Miller Street  
NORTH SYDNEY NSW 2060

Attention: Thomas Onus

Contact: Wayne Ryan  
Phone: 02 4429 4442  
Fax: 02 4429 4458  
Email: [Wayne.Ryan@dnr.nsw.gov.au](mailto:Wayne.Ryan@dnr.nsw.gov.au)

Our ref: 10BL603106

10 June 2009

Dear Sir

**Subject: Monitoring Bore Licence**

Please find enclosed your licence. Your attention is drawn to the nature and description of the work, terms, limitations and conditions under which the licence is issued.

Please show the licence to the Driller so that he is aware of any conditions affecting the construction of the bore. The Driller must have a current Driller's Licence issued by this Department.

Condition (2) of the license applies whether the bore is successful or not and it is the Driller's responsibility to supply the information. A letter is enclosed to be handed by you to the Driller outlining his obligations under the terms of the Water Act. Three copies of the Form 'A' for recording details of the bore are attached and these should be forwarded to the Driller. One copy will be returned to you when completed by the Driller. This must then be returned to this office together with details of any water analysis and pumping tests carried out.

The Form 'A' requests a sketch of the location of bore site together with the portion number and boundaries. This sketch is required even though you may have already indicated the site to the Department.

Your attention is drawn to conditions 11 and 12.

Please note construction must be consistent with the "*Minimum Construction Requirements for Water Bores in Australia*", Edition 2, September 2003.

Yours sincerely

For Wayne Ryan  
Licensing Officer

# Department of Water and Energy

Sydney South Coast Region  
P O Box 3720  
10 Valentine Ave  
Parramatta NSW 2124  
Phone: ( 02 ) 98957814

## BORE LICENSE CERTIFICATE UNDER SECTION 115 OF THE WATER ACT, 1912

10BL603106



NSW Government

Department of Water & Energy

Mobil Oil Australia Pty Ltd  
C/- U R S Australia  
Level 3, 116 Miller St  
North Sydney NSW 2060

LICENSE NUMBER
10BL603106
DATE LICENSE VALID FROM
10-Jun-2009
DATE LICENSE VALID TO
PERPETUITY
FEE
\$0.00

ABN 27380445450 GST NIL

### LOCATION OF WORKS

Portion(s) or Lot/Section/DP  
2//91361  
1//163768  
A//201599

PARISH  
Pambula  
Pambula  
Pambula

COUNTY  
Auckland  
Auckland  
Auckland

### TYPE OF WORKS

Well

### PURPOSE(S) FOR WHICH WATER MAY BE USED

Monitoring Bore

### CONDITIONS APPLYING TO THIS LICENSE ARE

As shown on the attached Condition Statement

ORIGINAL

**Department of Water and Energy****CONDITIONS STATEMENT REFERRED TO ON  
10BL603106  
ISSUED UNDER PART V OF THE WATER ACT, 1912  
ON 10-Jun-2009**

(1) THE LICENCE SHALL LAPSE IF THE WORK IS NOT COMMENCED AND COMPLETED WITHIN THREE YEARS OF THE DATE OF THE ISSUE OF THE LICENCE.

(2) THE LICENSEE SHALL WITHIN TWO MONTHS OF COMPLETION OR AFTER THE ISSUE OF THE LICENSE IF THE WORK IS EXISTING, FURNISH TO THE DEPARTMENT OF WATER AND ENERGY:-

(A) DETAILS OF THE WORK SET OUT IN THE ATTACHED FORM "A" (MUST BE COMPLETED BY A DRILLER).

(B) A PLAN SHOWING ACCURATELY THE LOCATION OF THE WORK, IN RELATION TO PORTION AND PROPERTY BOUNDARIES.

(C) A ONE LITRE WATER SAMPLE FOR ALL LICENCES OTHER THAN THOSE FOR STOCK, DOMESTIC, TEST BORES AND FARMING PURPOSES.

(D) DETAILS OF ANY WATER ANALYSIS AND/OR PUMPING TESTS.

(3) THE LICENSEE SHALL ALLOW THE DEPARTMENT OF WATER AND ENERGY OR ANY PERSON AUTHORISED BY IT, FULL AND FREE ACCESS TO THE WORKS, EITHER DURING OR AFTER CONSTRUCTION, FOR THE PURPOSE OF CARRYING OUT INSPECTION OR TEST OF THE WORKS AND ITS FITTINGS AND SHALL CARRY OUT ANY WORK OR ALTERATIONS DEEMED NECESSARY BY THE DEPARTMENT FOR THE PROTECTION AND PROPER MAINTENANCE OF THE WORKS, OR THE CONTROL OF THE WATER EXTRACTED AND FOR THE PROTECTION OF THE QUALITY AND THE PREVENTION FROM POLLUTION OR CONTAMINATION OF SUB-SURFACE WATER.

(4) IF DURING THE CONSTRUCTION OF THE WORK, SALINE OR POLLUTED WATER IS ENCOUNTERED ABOVE THE PRODUCING AQUIFER, SUCH WATER SHALL BE SEALED OFF BY:-

(A) INSERTING THE APPROPRIATE LENGTH(S) OF CASING TO A DEPTH SUFFICIENT TO EXCLUDE THE SALINE OR POLLUTED WATER FROM THE WORK.

(B) CEMENTING BETWEEN THE CASING(S) AND THE WALLS OF THE BORE HOLE FROM THE BOTTOM OF THE CASING TO GROUND LEVEL.

ANY DEPARTURE FROM THESE PROCEDURES MUST BE APPROVED BY THE DEPARTMENT BEFORE UNDERTAKING THE WORK.

(5) (A) THE LICENSEE SHALL NOTIFY THE DEPARTMENT OF WATER AND ENERGY IF A FLOWING SUPPLY OF WATER IS OBTAINED. THE BORE SHALL THEN BE LINED WITH CASING AND CEMENTED AND A SUITABLE CLOSING GEAR SHALL BE ATTACHED TO THE BOREHEAD AS SPECIFIED BY THE DEPARTMENT OF WATER AND ENERGY.

(B) IF A FLOWING SUPPLY OF WATER IS OBTAINED FROM THE WORK, THE LICENSEE SHALL ONLY DISTRIBUTE WATER FROM THE BORE HEAD BY A SYSTEM OF PIPE LINES AND SHALL NOT DISTRIBUTE IT IN DRAINS, NATURAL OR ARTIFICIAL CHANNELS OR DEPRESSIONS.

(6) IF A WORK IS ABANDONED AT ANY TIME THE LICENSEE SHALL NOTIFY THE DEPARTMENT OF WATER AND ENERGY THAT THE WORK HAS BEEN ABANDONED AND SEAL OFF THE AQUIFER BY:-

(A) BACKFILLING THE WORK TO GROUND LEVEL WITH CLAY OR CEMENT AFTER WITHDRAWING THE CASING (LINING); OR

(B) SUCH METHODS AS AGREED TO OR DIRECTED BY THE DEPARTMENT OF WATER AND ENERGY.

(7) THE LICENSEE SHALL NOT ALLOW ANY TAILWATER/DRAINAGE TO DISCHARGE INTO OR ONTO:-

- ANY ADJOINING PUBLIC OR CROWN ROAD;
- ANY OTHER PERSONS LAND;
- ANY CROWN LAND;
- ANY RIVER, CREEK OR WATERCOURSE;
- ANY NATIVE VEGETATION AS DESCRIBED UNDER THE NATIVE VEGETATION CONSERVATION ACT 1997;
- ANY WETLANDS OF ENVIRONMENTAL SIGNIFICANCE.

(8) WORKS USED FOR THE PURPOSE OF CONVEYING, DISTRIBUTING OR STORING WATER TAKEN BY MEANS OF THE LICENSED WORK SHALL NOT BE CONSTRUCTED OR INSTALLED SO AS TO OBSTRUCT THE REASONABLE PASSAGE OF FLOOD WATERS FLOWING INTO OR FROM A RIVER.

(9) IF THE BORE AUTHORISED BY THIS LICENSE IS LINED WITH STEEL OR PLASTIC CASING THE INSIDE DIAMETER OF THAT CASING SHALL NOT EXCEED 220 MM.

(10) WATER SHALL NOT BE PUMPED FROM THE BORE AUTHORISED BY THIS LICENSE FOR ANY PURPOSE OTHER THAN GROUNDWATER INVESTIGATION.

(11) SUBJECT TO CONDITION (12) THE LICENSEE SHALL WITHIN TWO MONTHS OF THE DATE OF COMPLETION OF THE BORE AUTHORISED BY THE LICENSE,

(1) BACKFILL IT WITH CLAY OR CEMENT TO GROUND LEVEL, AFTER WITHDRAWING ANY CASING(LINING), OR:-

(2) RENDER IT INEFFECTIVE BY ANY OTHER MEANS ACCEPTABLE TO THE DEPARTMENT.

(12) CONDITION (11) SHALL HAVE NO FORCE OR EFFECT IF:-

(1) AT THE RELEVANT TIME THERE IS WITH THE DEPARTMENT OF WATER AND ENERGY, AN APPLICATION IN RESPECT OF WHICH THE DEPARTMENT HAS NOT MADE A DECISION TO CONVERT THE GROUNDWATER INVESTIGATION BORE INTO A PRODUCTION BORE; OR

(2) THE LICENSEE HAS COMPLETED THE BORE FOR THE PURPOSE OF MEASURING WATER LEVELS OR WATER QUALITY BY THE ADDITION OF CASING WITH A DIAMETER NOT EXCEEDING 220MM.

---

End Of Conditions

# FORM A

(This form MUST be completed and returned to the Department)

*DWE use only*

MWS

LICENCE NO. 10BL603106

3

Depth (m)		Hole Diam (mm)	Method	Fluid used Air,Mud etc
From	To			
0	4	125	Auger	n/a

Licence No	DL 1722
Name	D. Miller
Contractor	Macquarie Drilling
Rig Type	Rotary T.P.

Date Completed 14/5/09 Final Depth 4-1 m Intended Use Monitoring  
Final Salinity\* 500 mg/L or taste Temperature \_\_\_\_\_ C If abandoned state procedure \_\_\_\_\_

*\*If water analysis available please supply copy of report*

Date	Duration (hours)	S.W.L. (m)	D.W.L. (m) at end of period	Yield (L/s)	Pump Intake Depth (m)
1					
2					
3					
4					

Testing Equipment Used		
Method	To Measure Water Level	To Measure Discharge

Tested by: \_\_\_\_\_

\* Please supply copy of data      1 If artesian flow, please supply static and dynamic pressures (kPa) respectively

SWL-Standing Water Level

DDL-Drawdown Water

*Level when pumped*

**IF NOT DRILLED BY BORING PLANT PLEASE GO TO SECTION 12**

**6 AQUIFERS** Depths from natural surface level to nearest 0.1 m

*L/s* -litres/second

[illegible]

7 **CASING** Depths from natural surface level to nearest 0.1 m. If above surface level: \_\_\_\_\_ m above surface

[illegible]

SLOTTED CASING:- oxy cut ☐    sawn ☒    slotted in hole ☐    stamped slot ☐

## SUMMARY

Open hole 

Open ended casing ☐

Slotted casing ☐

Slotted liner ☐

Screen ☒

Gravel pack ☒

Type of Bottom

Cap ☒ Plug ☐

Material	Outer Diameter (mm)	Slotted		Slot size	
		From (m)	To (m)	Length (m)	Width (mm)

SCREEN:- wire wound ☐ gauze ☐ plastic ☒ other \_\_\_\_\_

Brand / Material	Outer Diameter (mm)	From (m)	To (m)	Aperture (mm)	Method of Fixing eg Packer Screwed etc
------------------	---------------------	----------	--------	---------------	---

1	PVC C11B	65X	1.1 - 4.1	0.4	screwed
2					
3					
4					
5					



17 SIGNATURE OF LICENSEE \_\_\_\_\_ DATE \_\_\_\_\_

# FORM A

(This form MUST be completed and returned to the Department)

*DWE use only*

MW 6

LICENCE NO. 03 603 06

3

Depth (m)		Hole Diam (mm)	Method	Fluid used Air,Mud etc
From	To			
0	2	125	Auger	Wt

Licence No	DL 1722
Name	D. Miller
Contractor	Macquarie Drill
Rig Type	Rotary

Date Completed 14/5/09 Final Depth 3.5 m Intended Use Monitoring  
Final Salinity\* 500 mg/L or taste Temperature \_\_\_\_\_ C If abandoned state procedure \_\_\_\_\_

\*If water analysis available please supply copy of report

Date	Duration (hours)	S.W.L. † (m)	D.W.L. † (m) at end of period	Yield (l/s)	Pump Intake Depth (m)
1					
2					
3					
4					

Testing Equipment Used		
Method	To Measure Water Level	To Measure Discharge

Tested by: \_\_\_\_\_

\* Please supply copy of data      1 If artesian flow, please supply static and dynamic pressures (kPa) respectively

SWL-*Standing Water Level*

DDL-Drawdown Water

**Level when pumped**

IF NOT DRILLED BY BORING PLANT PLEASE GO TO SECTION 12

6 **AQUIFERS** Depths from natural surface level to nearest 0.1 m

*L/s* -litres/second

[illegible]

7 **CASING** Depths from natural surface level to nearest 0.1 m. If above surface level: \_\_\_\_\_ m above surface

[illegible]

SLOTTED CASING:- oxy cut ☐ sawn ☒ slotted in hole ☐ stamped slot ☐

Open hole ☐

Open ended casing ☐

Slotted casing ☐

Slotted liner ☐

Screen ☒

Gravel pack ☒

### Type of Bottom

Cap ☒ Plug ☐

Material	Outer Diameter (mm)	Slotted		Slot size		
		From (m)	To (m)	Length (m)	Width (mm)	Direction eg Vertical

SCREEN:- wire wound ☐ gauze ☐ plastic ☒ other \_\_\_\_\_

Brand / Material	Outer Diameter (mm)	From (m)	To (m)	Aperture (mm)	Method of Fixing eg Packer Screwed etc
------------------	---------------------	----------	--------	---------------	---

1	PVC CL 18	65	0.5	35	0.24	SCT.
2						
3						
4						
5						

9	GRAVEL PACK		Depth (m)	(mm)	Quantity (mm)
	TYPE	GRADE	From	To	
	Rounded <input type="checkbox"/>		Graded <input checked="" type="checkbox"/>		1-2
	Crushed <input type="checkbox"/>		Ungraded <input type="checkbox"/>		

Treatment	Method	Duration	Success

## 11 DEVELOPMENT

Method	Surging <input type="checkbox"/>	Jetting <input type="checkbox"/>	Air <input type="checkbox"/>	Backwashing <input type="checkbox"/>	Pumping <input checked="" type="checkbox"/>	Other
Time Taken	hrs	hrs	hrs	hrs	0.5 hrs	hrs

**12 IF NOT DRILLED HOLE** ie. hand dug, back hoe, dragline etc

[illegible]

13 STRATA DETAILS to nearest 0.1m

[illegible]TOTAL DEPTH DRILLED 4 m

## 14 SIGNATURE OF DRILLER OR CONTRACTOR

D. S. Miller

DATE 22/6/09

15 **PLAN TO SCALE** showing location of bore site with respect to portion (or Lot) boundaries, or sketch with distance in metres from portion boundaries. Even if sketch already supplied with licence application please confirm actual bore site on this sketch.

SITE CHOSEN BY: Hydrogeologist ☒ Geologist ☐ Driller ☐ Diviner ☐ Client ☐ Other ☐ \_\_\_\_\_  
URS T. Jones.

Refer to attached drawing.

North



Easting 759364.48 Northing 5913434.99

County Auckland Parish Pembroke Portion \_\_\_\_\_ Scale \_\_\_\_\_

16 REMARKS MW 6

## 17 SIGNATURE OF LICENSEE

DATE \_\_\_\_\_

## DEPARTMENT OF WATER AND ENERGY

## FORM A

## PARTICULARS OF COMPLETED BORE

(This form MUST be completed and returned to the Department)

BORE NO:

DWE use only

MN 7

1 NAME OF LICENSEE Mobil Oil Australia Pty LtdLICENCE NO 10BL 603106

## 2 DRILLER

Licence No	<u>DL 1722</u>
Name	<u>D. Miller</u>
Contractor	<u>Macquarie Drilling</u>
Rig Type	<u>Rotary</u>

## 3

DRILLING  
SUMMARY

Depth (m)		Hole Diam (mm)	Method	Fluid used
From	To			Air, Mud etc
<u>0</u>	<u>4</u>	<u>125</u>	<u>Auger</u>	<u>NIL</u>

## 4 MAIN SUMMARY

New Bore <input checked="" type="checkbox"/>	Replacement Bore <input type="checkbox"/>	Deepening <input type="checkbox"/>	Enlarging <input type="checkbox"/>	Reconditioning <input type="checkbox"/>
Date Completed <u>14/5/09</u>	Final Depth <u>3.5</u> m	Intended Use <u>Mon. boring</u>		
Final Salinity* <u>500</u> mg/L or taste	Temperature <u>C</u>	If abandoned state procedure		

\*If water analysis available please supply copy of report

## 5 PUMPING TESTS ON COMPLETION If 3-stage and single-rate tests available, enter in this order \*

Date	Duration (hours)	S.W.L. (m)	D.W.L. (m) at end of period	Yield (L/s)	Pump Intake Depth (m)	Testing Equipment Used		
						Method	To Measure Water Level	To Measure Discharge
1								
2								
3								
4								

\* Please supply copy of data 1 If artesian flow, please supply static and dynamic pressures (kPa) respectively

SWL-Standing Water Level

DDL-Drawdown Water

Level when pumped

IF NOT DRILLED BY BORING PLANT PLEASE GO TO SECTION 12

## 6 AQUIFERS Depths from natural surface level to nearest 0.1 m

L/s - litres/second

Water Bearing From (m)	To (m)	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth at Test (m)	Test Method	Duration (Hrs)	Salinity* mg/L or Taste	Remarks
1 <u>1.5</u>	<u>4</u>	<u>1.7</u>		<u>Not measured</u>				<u>900</u>	
2									
3									
4									

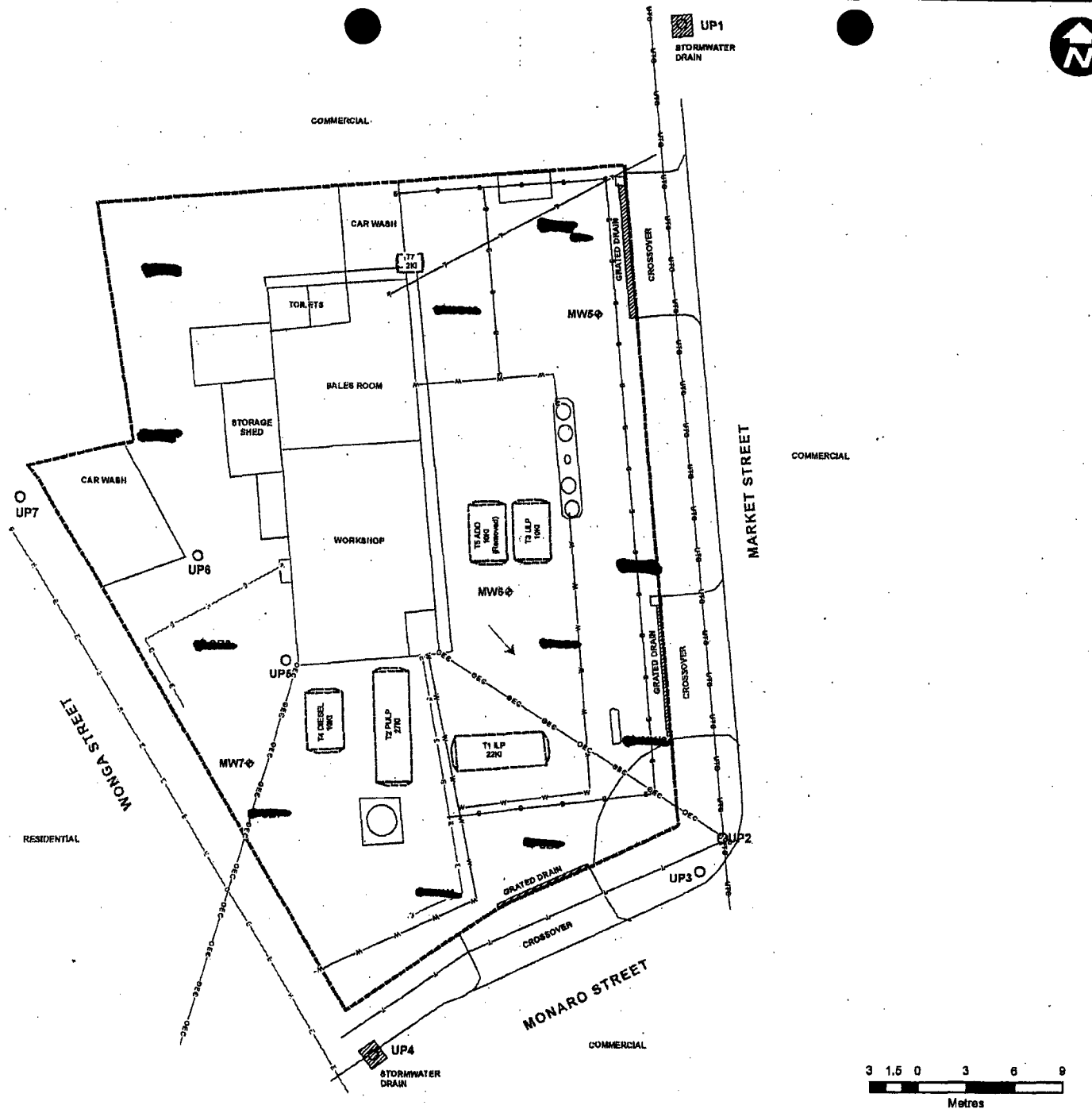
## 7 CASING Depths from natural surface level to nearest 0.1 m. If above surface level: \_\_\_\_\_ m above surface

Type and Thickness	Outside Diameter (mm)	From (m)	To (m)	Welded Screwed Glued etc	How Fixed				Cemented		Casing Shoe	
					Held in clamp	Seated on bottom	Driven into small hole	Other	From (m)	To (m)	Yes	No
1 <u>PVC</u>	<u>50</u>	<u>0.05</u>		<u>screwed</u>		<u>✓</u>			<u>0</u>	<u>0.1</u>		
2												
3												











## 8 COMPLETION DETAILS

SUMMARY		SLOTTED CASING:- oxy cut <input type="checkbox"/> sawn <input checked="" type="checkbox"/> slotted in hole <input type="checkbox"/> stamped slot <input type="checkbox"/>							
Open hole <input type="checkbox"/>	Material	Outer Diameter (mm)	Slotted		Slot size			Direction eg Vertical	
Open ended casing <input type="checkbox"/>			From (m)	To (m)	Length (m)	Width (mm)			
Slotted casing <input type="checkbox"/>									
Slotted liner <input type="checkbox"/>									
Screen <input checked="" type="checkbox"/>	SCREEN:- wire wound <input type="checkbox"/> gauze <input type="checkbox"/> plastic <input checked="" type="checkbox"/> other _____								
Gravel pack <input checked="" type="checkbox"/>	Brand / Material	Outer Diameter (mm)	From (m)	To (m)	Aperture (mm)	Method of Fixing eg Packer Screwed etc			
Type of Bottom Cap <input type="checkbox"/> Plug <input type="checkbox"/>	1 <u>PVC</u>	<u>65</u>	<u>0.5</u>	<u>3.5</u>	<u>0.4</u>	<u>SL</u>			
	2								
	3								
	4								
	5								


DATE \_\_\_\_\_



**LEGEND:**

-  Monitoring Well Location (URS)
-  Electricity
-  Overhead Electricity Cable
-  Sewer
-  Telstra
-  Underground Telstra Cable
-  Water
-  Groundwater Flow Direction
-  Underground Storage Tanks
-  Site Boundary

Whilst every care is taken by URS to ensure the accuracy of the services or labour data and site boundaries, URS makes no representation or warranties about its accuracy, reliability, completeness, suitability for any particular purpose and disclaims all responsibility for liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and the costs which may be incurred as a result of data being inaccurate in any way for any reason.

Drawn: AO	Approved: TO	Date: 17/06/2009
Job No.: 42424195	File No.: 42424195.003.mxd	
Client		
MOBIL OIL AUSTRALIA PTY LTD		
Project		
MOBIL SERVICE STATION PP2 ESA 27 MARKET STREET MERIMBULA, NSW		
Title		
DETAILED SITE LAYOUT PLAN		
Figure: 3		
		

URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: **en**

Client: **Mobil Oil Australia Pty Ltd**  
Location: **27 Market St, Merrimbula NSW**

Drilling Contractor: **Macquarie Pty Ltd**

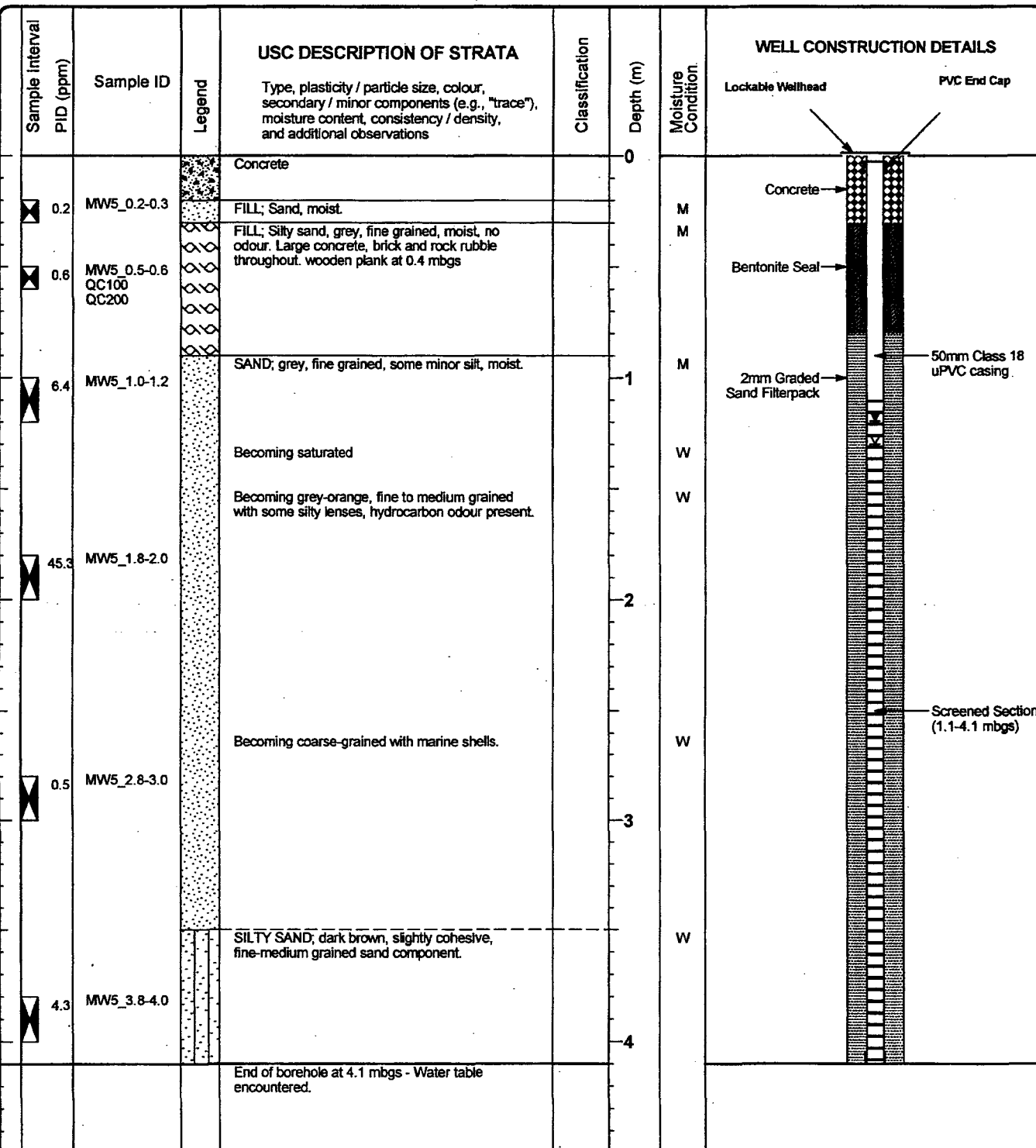
Project No.: **42424195**

Logged By: **L. Alexander**  
Checked By: **T Onus**  
Date Started: **13-5-09**  
Date Finished: **14-5-09**

Bore Size: **125 mm**  
Total Depth: **4.10 m**  
Casing Size: **50 mm**

Relative Level: **2.02 mAHD**  
Coordinates: **5913451.95 N**  
**759373.37 E**  
Permit No:

Drill Type: **Continuous flight hollow stem auger**  
Drill Model: **Geoprobe**  
Drill Fluid: **None**





URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: **en**

Client: **Mobil Oil Australia Pty Ltd**

Drilling Contractor: **Macquarie Pty Ltd**

Project No.: **42424195**

Location: **27 Market St, Merrimbula NSW**

Logged By: **L. Alexander**

Bore Size: **125 mm**

Relative Level: **2.26 mAHD**

Drill Type: **Continuous flight hollow stem auger**

Checked By: **T Onus**

Total Depth: **4.00 m**

Coordinates: **5913434.99 N**

Drill Model: **Geoprobe**

Date Started: **13-5-09**

Casing Size: **50 mm**

**759364.48 E**

Drill Fluid: **None**

Date Finished: **14-5-09**

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	WELL CONSTRUCTION DETAILS
			Concrete		0		Lockable Wellhead PVC End Cap Concrete
0.2	MW6_0.2-0.3		FILL; Silty sand, grey, fine grained, moist with large concrete, brick and rock rubble throughout.			M	Bentonite Seal 2mm Graded Sand Filterpack
0.1	MW6_0.7-0.8		SILTY SAND; grey-orange, fine-medium grained sand with silty lenses throughout.			M	
0.1	MW6_1.0-1.2		Becoming saturated		1	W	
			SAND; grey, fine-medium grained, occasional marine shells, moist.			W	
0.3	MW6_1.8-2.0				2		Screened Section (0.5-3.5 mbgs)
0	MW6_2.8-3.0		SILTY SAND; brown-grey, fine-medium grained, cohesive.		3	W	
			SILTY CLAY; grey with orange mottling, low-medium plasticity, very firm, some minor sand.			W	
0	MW6_3.8-4.0				4		Bentonite Backfill
			End of borehole at 4.0 mbgs - Water table encountered.				

URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: en

Client: Mobil Oil Australia Pty Ltd  
Location: 27 Market St, Merrimbula NSW

Drilling Contractor: Macquarie Pty Ltd

Project No.: 42424195

Logged By: L. Alexander

Bore Size: 125 mm

Relative Level: 2.38 mAHD

Drill Type: Continuous flight hollow stem auger

Checked By: T Onus

Total Depth: 4.00 m

Coordinates: 5913425.82 N

Drill Model: Geoprobe

Date Started: 13-5-09

Casing Size: 50 mm

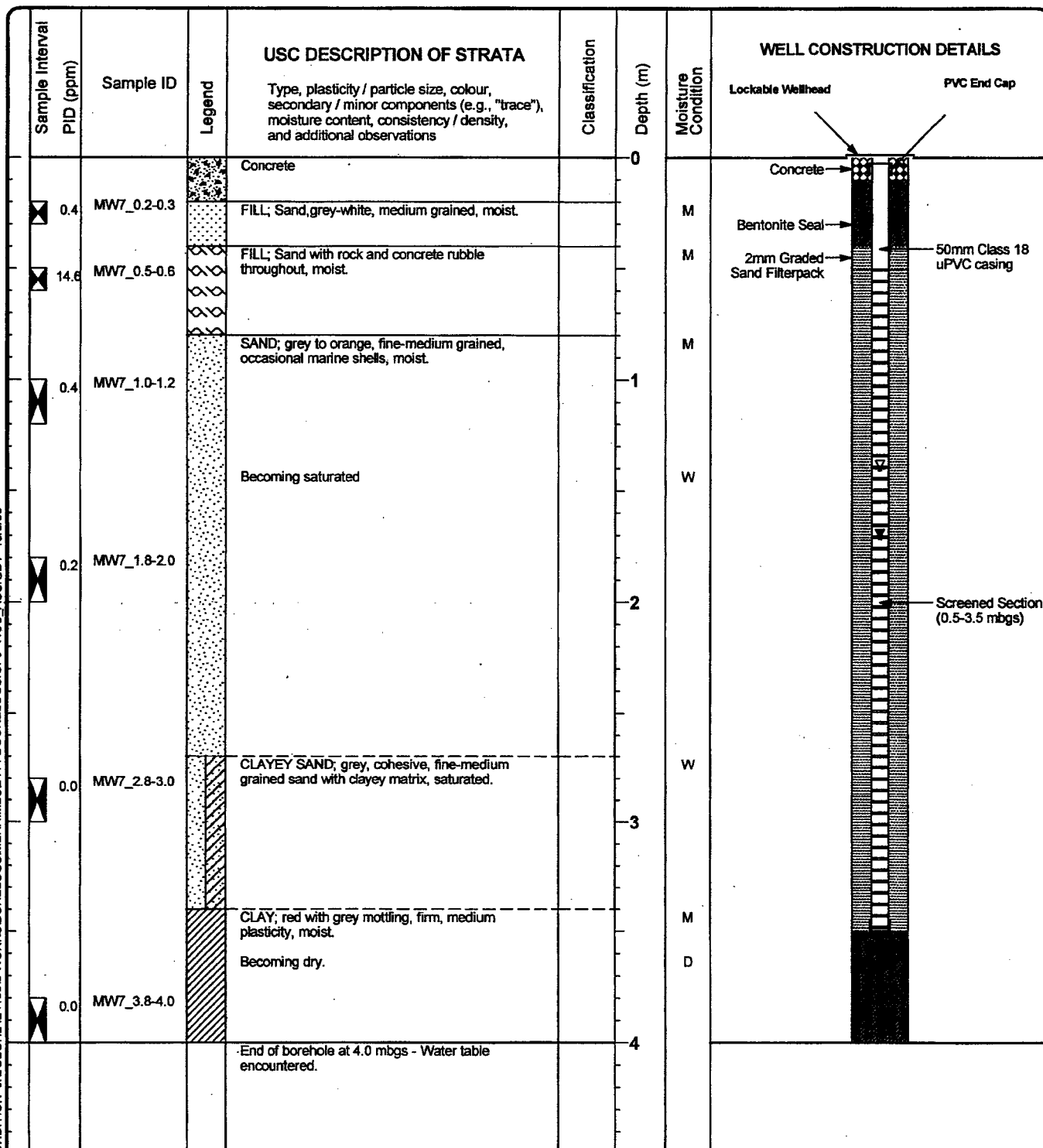
759349.95 E

Drill Fluid: None

Date Finished: 14-5-09

Permit No:

WELL\_WITH\_MOIST\_CONDITION J:\OBRS\42424195\5 WORKS\BORELOGS\MERRIMBULA PP2 BORELOGS.GPJ WCC\_AUS.GDT 10/8/09



## Appendix E Waste Disposal Documentation

Department of Environment & Climate Change NSW - Online Waste Tracking System

TRANSPORT CERTIFICATE - No. 2T00134858

Created by: Tony Wilson 08-May-2009 9:11 am

Status: Created

CA no: 2C00027854

CA start date: 17-Apr-2009

CA end date: 16-Apr-2010

CONSIGNOR

VOLMAN ENTERPRISES  
6 Verna Place  
Quakers Hill, NSW 2763

Contact: JOHN VOLMAN  
Phone: 0418 289683  
ABN: 72 085 860 537

Role: Producer  
Email: N/A  
Fax: (02) 9837 7350  
Emergency: 0418 289683  
ANZSIC code: 0  
Licence no.: NA

Pickup As above  
details:

WASTE

Waste code: J120 - Waste oil/hydrocarbons mixtures/emulsions in water

Description: Oil/hydrocarbon mixed with water nos

Form: Liquid

Liquid waste levy applies: Yes

Proposed treatment: Chemical/Physical treatment

Classification: Liquid

Contaminants: N/A

Dangerous goods class: N/A

Subsidiary risk class: N/A

UN no.: N/A

Packaging type: N/A

Packing group no: N/A

No. package: N/A

PICKUP

Waste amount at pickup: 25 (required - Yes)

I declare that to the best of my knowledge and belief the above information is true and correct.

Name and Position (Block letters)

Signature Date 27-5-09

VOLMAN ENTERPRISES

6 Verna Place  
Quakers Hill, NSW 2763

Contact: JOHN VOLMAN  
Phone: 0418 289683  
Licence no.: 11922

Email: N/A  
Fax: N/A  
Vehicle reg: TBA

Transit state: N/A  
Transport type: Road

I declare that to the best of my knowledge and belief the above information is true and correct.

Name and Position (Block letters)

Signature Date 27-5-09

WORTH RECYCLING SOUTH WINDSOR  
CNR BLACKMAN CRES & FAIREY ROAD  
SOUTH WINDSOR, NSW 2756

Contact: TONY WILSON  
Phone: (02) 8558 5100  
Licence no.: 4602

Email: tony@worthrecycling.com.au  
Fax:  
Receiving facility ref no.: N/A

Waste amount at arrival: 25 Date waste arrived at the facility: 27/5/09

ACCEPT / REJECT THE WASTE

The receiving facility accepted the waste - Date accepted: 27/5/09 Date Processed: 27/5/09 Treatment: RECYCLING

The receiving facility rejected the waste (complete section below)

Reason for rejection:

Rejected waste sent to - Name:

Address:

I declare that to the best of my knowledge and belief the above information is true and correct - complete if accepted or rejected:

Name and Position (Block letters) COLIN GARVIN OPERATOR

Signature Date 27/5/09

NOTE: The Protection of the Environment Operations (Waste) Regulation 2005 ("the Regulation") requires that an approved transport certificate accompany certain wastes when transported into, out of or within NSW. This transport certificate is in the approved form and meets the requirements of the Regulation provided that:

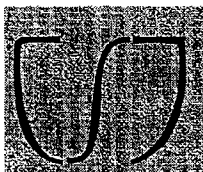
- (a) the consignor certifies, by signing this certificate, that the information in Part 1 of the certificate is correct;
- (b) the transporter certifies, by signing the certificate, that the information in Part 2 of the certificate is correct; and
- (c) the receiving facility (receiver) certifies, by signing this certificate, that the information in Part 3 of the certificate is correct; and
- (d) the receiving facility records any discrepancies between the waste received and the information recorded on this certificate in the DEC online waste tracking system.

If any of the information in Parts 1 and 2 of the certificate is not correct and it is not practical at the time to change the information in the DEC online tracking system and print a new version of the certificate, the consignor or transporter must write and initial any corrections on the certificate. The receiving facility must ensure these corrections are entered into the DEC online system as soon as is practicable afterwards.

The receiving facility must retain this certificate for four years.

2 DRUMS EX MOBILE SERVO MARIMBULA.

## Appendix F Surveyor Certificates/Reports



# Caddey Searl & Jarman

*Consulting Surveyors and Property Valuers*

ABN 76 762 499 293

**Merimbula Office:**

60 Main Street  
(PO Box 488)  
Merimbula NSW 2548  
Ph: (02)6495 1044  
Fax: (02)6495 3070  
Email: [csjmerim@csj.com.au](mailto:csjmerim@csj.com.au)

**Bega Office**

10 Canning Street  
(PO Box 259)  
Bega NSW 2550  
Ph: (02)6492 2933  
Fax: (02)6492 2934  
Email: [csjbega@csj.com.au](mailto:csjbega@csj.com.au)

**Bermagui Branch**

2/4 Wallaga Street  
Bermagui NSW 2546  
Ph: (02) 6493 4197  
(Wednesday Only)

**PARTNERS**

**D. Bothamley MIS (Aust)**  
**M. Collins MIS (Aust)**



**C. Ferguson AAPI (CPV) & Econ**  
**J. Langford AAPI (CPV)**



**Associates**

**A. Jarman, MIS (Aust)**  
**C. Maxted, MIS (Aust)**  
**P. Guthrey, MIS (Aust)**

Our reference: **60341**

Your reference:

25 May 2009

URS Australia Pty Ltd  
Level 3  
116 Miller Street  
NORTH SYDNEY NSW 2060

**Attention: Mr T Onus**

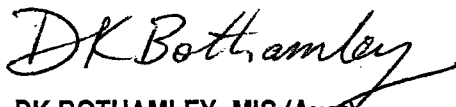
Dear Sir

**RE: MONITORING WELLS AT MOBIL SERVICE STATION  
MARKET STREET MERIMBULA**

As instructed, attached please find our plan showing co-ordinates and levels of the seven (7) monitoring wells. Please verify that the numbering as shown on our plan is consistent with that of your own records.

We thank you for your instructions.

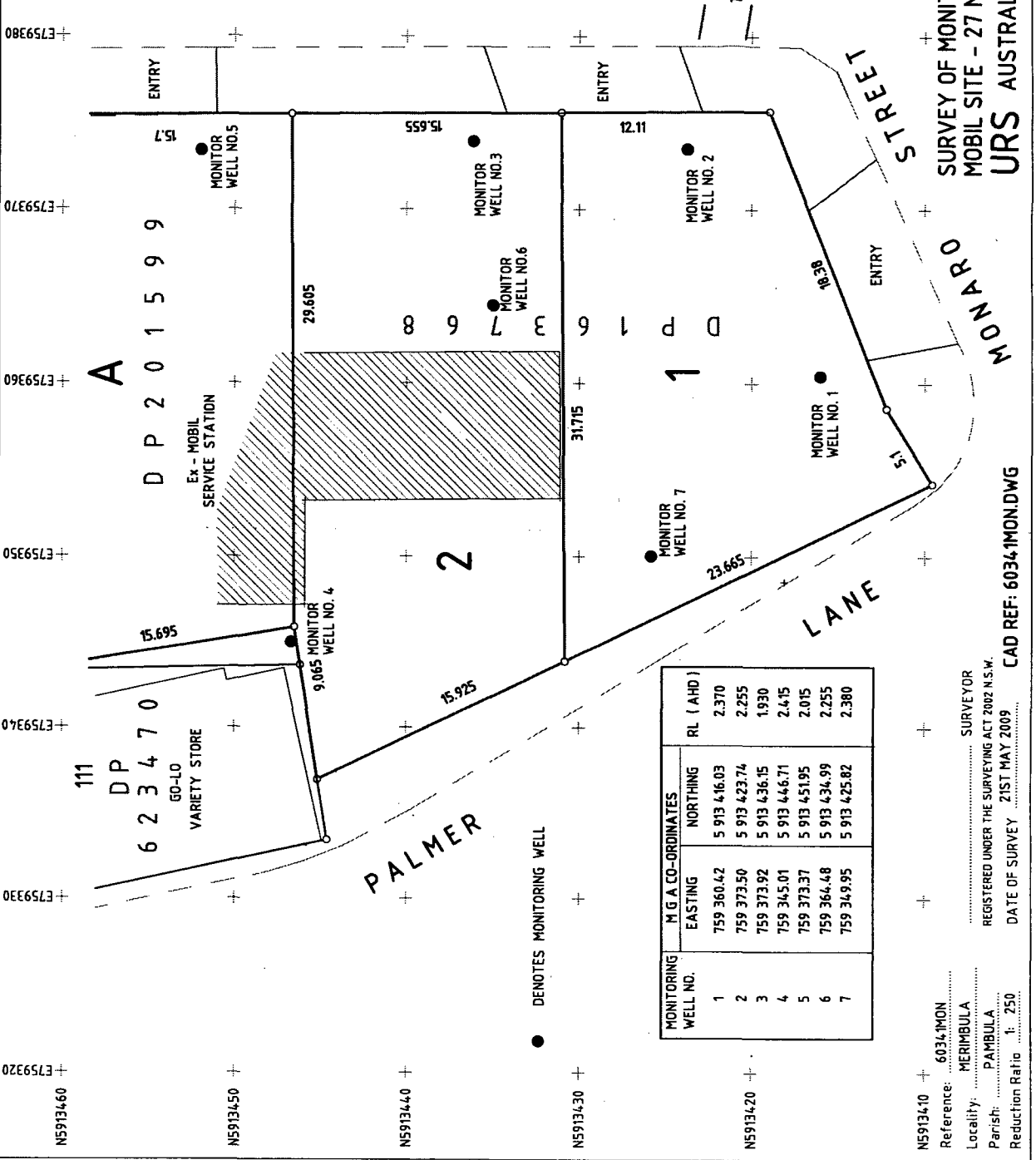
Yours faithfully

  
**DK BOTHAMLEY MIS (Aust)**  
Registered Surveyor

**CADDEY SEARL AND JARMAN**  
CONSULTING SURVEYORS AND VALUERS  
ABN 76 762 499 293

10 CANNING ST  
IPD BOX 259  
BEGA NSW 2550  
PHONE 02-6472 2933  
FAX 02-6472 2934  
EMAIL: csj@csj.com.au

60 MAIN ST  
IPD BOX 480  
MERIMbla NSW 2540  
PHONE 02-6472 2934  
FAX 02-6472 2935  
EMAIL: csj@csj.com.au





## Appendix G Groundwater Purging Data Sheets

**URS**

## BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET

BORE ID: MW01Project No 92924195Project Name M.S.S MerimbulaLocation Merimbula

## Development

Date 21/5/09Developed by: ORWell head condition: OK

Well Size	50 mm	32 mm
L/m	4	

	Start	End
Time		
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Footvalve / OtherDischarge Rate L/minVolume Removed L/minPSH Level mbTOC

Comments

## Field Analyses

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)

## Purging

Date 21/5/09Developed by: ORWell head condition: OK

Well Size	50 mm	32 mm
L/m	4	

	Start	End
Time		
Bore Depth (mbTOC)	<u>9.0</u>	
- SWL (mbTOC)	<u>1.75</u>	
x L/m	<u>4</u>	
= Bore Vol	<u>10</u>	

Development Method Bailer / Footvalve / Low FlowDischarge Rate L/minVolume Removed L/minPSH Level mbTOC

Comments

## Field Analyses

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)
<u>10</u>	<u>-</u>	<u>3.03</u>	<u>6.35</u>	<u>-1</u>	<u>20.2</u>	<u>Brown / turbid</u>
<u>10</u>	<u>-</u>	<u>2.79</u>	<u>6.39</u>	<u>-3</u>	<u>20.2</u>	
<u>50</u>	<u>-</u>	<u>2.86</u>	<u>6.31</u>	<u>-9</u>	<u>20.4</u>	

## Sampling

Date 21/05/09Sampling Method Bailer / Footvalve / Low FlowSampled by: ISOD

Container type and size

Sample ID	Metals	TPH/BTEX VHC	TPH, VOC	OCP/OPP	PAHs	Phenoxy Acid Herbicides	Nutrients	PCB	SVOC	vCHCs	svCHCs	pH	Asbestos	Total
	250 ml (P)	2x40ml Vial(O)	1L	1L	1L	1L	250 ml (P)	1L	1L	2x40ml Vial(O)	1L	250 ml (P)	ziplock bag	
	HNO3	HCl	Nil	Nil	Nil	Nil	Nil	Nil	Nil	HCl	Nil	Nil		
	Red	Maroon	Amber	Amber	Amber	Amber	Green	Amber	Amber	Maroon	Amber	Green		
Primary	<u>MW01-210101</u>	<u>1</u>	<u>2</u>	<u>1</u>										
Duplicate														

Comments Well sampled

**URS**

**BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET**

BORE ID: MW02

Project No 42424195

Project Name MKS Merimbula

Location Merimbula

**Development**

Date 1/1/11

Developed by: [Signature]

Well head condition: [Signature]

Well Size	50 mm	32 mm
L/m	4	

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)

Start	End
Time	
Bore Depth (mbTOC)	
- SWL (mbTOC)	
x L/m	
= Bore Vol	

Development Method Bailer / Footvalve / Other

Discharge Rate 1.0 L/min

Volume Removed 1.0 L/min

PSH Level mbTOC

Comments [Signature]

**Purging**

Date 2/5/09

Developed by: [Signature]

Well head condition: OK

Well Size	50 mm	32 mm
L/m	4	

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)
1	3.31	470.5	6.02	33	20.4	Green / turbid
1.3	3.24	481.5	6.02	23	20.8	
1.4	3.13	488.5	5.99	25	21.2	

Start	End
Time	
Bore Depth (mbTOC)	1.06
- SWL (mbTOC)	1.670
x L/m	4
= Bore Vol	4.28

Development Method Bailer / Footvalve / Low Flow

Discharge Rate 1.0 L/min

Volume Removed 2.7 L/min

PSH Level mbTOC

Comments 27L purged

**Sampling**

Date 2/5/09

Sampled by: [Signature]

Sampling Method Bailer / Footvalve / Low Flow

Container type and size

Sample ID	Metals	TPH/BTEX VHC	TPH VOC	OCP/OPP	PAHs	Phenoxy Acid Herbicides	Nutrients	PCB	SVOC	vCHCs	svCHCs	pH	Asbestos	Total
	250 ml (P)	2x40ml Vial(G)	1L	1L	1L	1L	250 ml (P)	1L	1L	2x40ml Vial(G)	1L	250 ml (P)	ziplock bag	
	HNO3	HCl	Nil	Nil	Nil	Nil	Nil	Nil	Nil	HCl	Nil	Nil	bag	
	Red	Maroon	Amber	Amber	Amber	Amber	Green	Amber	Amber	Maroon	Amber	Green		

Primary Duplicate

Comments

Well sampled

14.30

MW02-21/5/09

**URS**

**BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET**

BORE ID: MWB3

Project No 42424195

Project Name MSS Merimbula

Location Merimbula

**Development**

Date 1/1/11

Developed by: [Signature]

Well head condition: [Signature]

Well Size	50 mm	32 mm
L/m	4	

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)

Time	Start	End
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Footvalve / Other

Discharge Rate L/min

Volume Removed L/min

PSH Level mbTOC

Comments [Signature]

**Purging**

Date 21/5/09

Developed by: NR

Well head condition: OK

Well Size	50 mm	32 mm
L/m	4	

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)
10		631.45	6.17	38	19.2	Brown fished R/D below
10		678.5	6.18	30	19.2	

Time	Start	End
Bore Depth (mbTOC)	4.5	
- SWL (mbTOC)	4.5	
x L/m	4.5	28
= Bore Vol	10	

Development Method Bailer / Footvalve / Low Flow

Discharge Rate L/min

Volume Removed 22 L/min

PSH Level mbTOC

Comments 22 ch

**Sampling**

Date 21/05/09

Sampled by: NR

Sampling Method Bailer / Footvalve / Low Flow

Container type and size

Sample ID	Metals	TPH/BTEX VHC	TPH, VOC	OCP/OPP	PAHs	Phenoxy Acid Herbicides	Nutrients	PCB	SVOC	vCHCs	ivCHCs	pH	Asbestos	Total
	250 ml (P)	2x40ml Vial(O)	1L	1L	1L	1L	250 ml (P)	1L	1L	2x40ml Vial(O)	1L	250 ml (P)	ziplock bag	
	HNO3	HCl	Nil	Nil	Nil	Nil	Nil	Nil	Nil	HCl	Nil	Nil		
	Red	Maroon	Amber	Amber	Amber	Amber	Green	Amber	Amber	Maroon	Amber	Green		
Primary	1	2	1											
Duplicate														

Comments Well Sampled.

14.45

**URS**

## BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET

BORE ID: MWΦ4Project No 42424195Project Name MSS MerimbulaLocation MERIMBULA

## Development

Date    /    /   Developed by:   Well head condition:   

Well Size	50 mm	32 mm
L/m		

	Start	End
Time		
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Footvalve / OtherDischarge Rate    L/minVolume Removed    L/minPSH Level    mbTOCComments   

## Field Analyses

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)

## Purging

Date 21/5/09Developed by: NRWell head condition: GOOD

Well Size	50 mm	32 mm
L/m	4	

	Start	End
Time	12:10	
Bore Depth (mbTOC)	3.90	
- SWL (mbTOC)	1.55	
x L/m	4	24
= Bore Vol	4L	

Development Method Bailer / Footvalve / Low FlowDischarge Rate    L/minVolume Removed 6 L/minPSH Level    mbTOCComments PRY @ 10L

## Field Analyses

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)
10L		364	6.94	-21	18.9	Dark Red

## Sampling

Date 21/05/09Sampling Method Bailer / Footvalve / Low FlowSampled by:   

Container type and size

Sample ID	Metals	TPH/BTEX/VOC	TPH, VOC	OCP/OPP	PAHs	Phenoxy Acid Herbicides	Nutrients	PCB	SVOC	vCHCs	avCHCs	pH	Asbestos	Total
	250 ml (P)	2x40ml Vial (O)	1L	1L	1L	1L	250 ml (P)	1L	1L	2x40ml Vial (O)	1L	250 ml (P)	ziplock bag	
	HNO3	HCl	Nil	Nil	Nil	Nil	Nil	Nil	Nil	HCl	Nil	Nil		
	Red	Maroon	Amber	Amber	Amber	Amber	Green	Amber	Amber	Maroon	Amber	Green		
Primary	MWΦ4 21/05/09	1	2	1										
Duplicate														

Comments Well sampled.

**URS**

**BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET**

BORE ID: MW05

Project No 9222195

Project Name Merimbula MSS

Location Merimbula

**Development**

Date           

Developed by:           

Well head condition:           

Well Size	50 mm	32 mm
L/m	4	

	Start	End
Time		
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Footvalve / Other

Discharge Rate            L/min

Volume Removed            L/min

PSH Level            mbTOC

Comments           

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)

**Purging**

Date 21.5.09

Developed by: MR

Well head condition: GOOD

Well Size	50 mm	32 mm
L/m	4	

	Start	End
Time	<u>10.10am</u>	
Bore Depth (mbTOC)	<u>4.00</u>	
- SWL (mbTOC)	<u>1.26</u>	
x L/m	<u>4</u>	<u>1.7</u>
= Bore Vol	<u>9L</u>	

Development Method Bailer / Footvalve / Low Flow

Discharge Rate            L/min

Volume Removed            L/min

PSH Level            mbTOC

Comments SPRINGS OF H2O

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)
<u>9</u>	<u>-</u>	<u>253</u>	<u>6.12</u>	<u>149</u>	<u>19.3</u>	<u>Grey/Black Turbidity 17C specks no odour</u>
<u>18</u>	<u>-</u>	<u>281</u>	<u>6.14</u>	<u>85</u>	<u>19.9</u>	
<u>27</u>	<u>-</u>	<u>276</u>	<u>6.16</u>	<u>67</u>	<u>20.1</u>	

**Sampling**

Date 21.05.09

Sampled by: MR

Sampling Method Bailer / Footvalve / Low Flow

Container type and size

Sample ID	Metals	TPH/BTEX VHC	TPH, VOC	OCP/OPP	PAHs	Phenoxy Acid Herbicides	Nutrients	PCB	SVOC	vCHCs	avCHCs	pH	Asbestos	Total
	250 ml (P)	2x40ml Vial(G)	IL	IL	IL	IL	250 ml (P)	IL	IL	2x40ml Vial(G)	IL	250 ml (P)	ziplock bag	
	HNO3	HCl	Nil	Nil	Nil	Nil	Nil	Nil	Nil	HCl	Nil	Nil		
	Red	Maroon	Amber	Amber	Amber	Amber	Green	Amber	Amber	Maroon	Amber	Green		
Primary <u>MW05-21/05/09</u>														
Duplicate <u>AC100-21/05/09</u>														

Comments AC100-21/05/09

TRIPPLICATE & EXTRA VOLUME FOR LAB REP & MS

**URS****BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET**BORE ID: MW66Project No. 424495Project Name MSS MerimbulaLocation Merimbula**Development**Date        /        /         
Developed by:         
Well head condition:       

Well Size	50 mm	32 mm
L/m	4	

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)

Start	End
Time	
Bore Depth (mbTOC)	
- SWL (mbTOC)	
x L/m	
= Bore Vol	

Development Method Bailer / Footvalve / OtherDischarge Rate        L/minVolume Removed        L/minPSH Level        mbTOCComments       **Purging**Date 21/05/04  
Developed by: OK  
Well head condition: NR

Well Size	50 mm	32 mm
L/m	4	

**Field Analyses**

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)
10	-	2.91	6.39	17	19.6	Brown / Black Purged
20	-	2.73	6.26	20	19.9	
30	-	2.23	6.20	18	19.1	

Start	End
Time	0.45
Bore Depth (mbTOC)	4.25
- SWL (mbTOC)	1.540
x L/m	4
= Bore Vol	10

Development Method Bailer / Footvalve / Low FlowDischarge Rate        L/minVolume Removed 30 L/minPSH Level        mbTOCComments 30L Purged**Sampling**Date 21/05/04  
Sampled by:       Sampling Method Bailer / Footvalve / Low Flow

Container type and size

Sample ID	Metals	TPH/BTEX VHC	TPH VOC	OCP/OPP	PAHs	Phenoxy Acid Herbicides	Nutrients	PCB	SVOC	vCHCs	svCHCs	pH	Asbestos	Total
	250 ml (P)	2x40ml Vial(G)	1L	1L	1L	1L	250 ml (P)	1L	1L	2x40ml Vial(G)	1L	250 ml (P)	ziplock bag	
	HNO3	HCl	Nil	Nil	Nil	Nil	Nil	Nil	Nil	HCl	Nil	Nil		
	Red	Maroon	Amber	Amber	Amber	Amber	Green	Amber	Amber	Maroon	Amber	Green		
Primary	MW66-21/05/04	1	2	1										
Duplicate														

Comments OK

14.10

PDP  
26.5

0

**URS**

## BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET

BORE ID: MW 7

Project No

42424195

Project Name

MSS Merimbula

Location

Merimbula

## Development

Date    /    /   Developed by:   Well head condition:   

Well Size	50 mm	32 mm
L/m	4	

	Start	End
Time		
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Footvalve / OtherDischarge Rate    L/minVolume Removed    L/minPSH Level    mbTOCComments   

## Field Analyses

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)

## Purging

Date 21/5/09Developed by:   Well head condition: Good

Well Size	50 mm	32 mm
L/m	4	

	Start	End
Time		
Bore Depth (mbTOC)	<u>1.2</u>	
- SWL (mbTOC)	<u>1.7</u>	
x L/m	<u>4.2</u>	
= Bore Vol	<u>4.2</u>	

Development Method Bailer / Footvalve / Low FlowDischarge Rate    L/minVolume Removed 5 L/minPSH Level    mbTOCComments DRY @ 5L

## Field Analyses

Vol Removed (L)	Dissolved Oxygen (%)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity, odour)
<u>9.5L</u>	<u>1</u>	<u>351</u>	<u>6.35</u>	<u>-34</u>	<u>20.6</u>	<u>Fresh Turbidity</u>
<u>2.5L</u>	<u>1</u>					

## Sampling

Date 21/05/09Sampled by:   Sampling Method Bailer / Footvalve / Low Flow

## Container type and size

Sample ID	Metals	TPH/BTEX VHC	TPH, VOC	OCP/OPP	PAHs	Phenoxy Acid Herbicides	Nutrients	PCB	SVOC	vCHCs	svCHCs	pH	Asbestos	Total
	250 ml (P)	2x40ml Vial(G)	1L	1L	1L	1L	250 ml (P)	1L	1L	2x40ml Vial(G)	1L	250 ml (P)	ziplock bag	
	HNO3	HCl	NB	NB	NB	NB	NB	NB	NB	HCl	NB	NB		
	Red	Maroon	Amber	Amber	Amber	Amber	Green	Amber	Amber	Maroon	Amber	Green		
Primary	<u>MW 7-21/05/09</u>	<u>1</u>	<u>2</u>	<u>1</u>										
Duplicate														

Comments

Well sampled



## Appendix H Laboratory Analytical Reports and Chain of Custody Documentation

**URS**

# CHAIN OF CUSTODY - MOBIL/ALS GRA CONTRACT

131654

CONSULTANT: <b>URS AUSTRALIA</b>	ALS Laboratory: <b>Brisbane</b> (Circle Laboratory - see address below) <b>Sydney</b>	TURNAROUND REQUIREMENTS (mark Due date or 'X') Non Standard (List due date) <b>Standard - 5 day TAT</b>	ALS Mobil Quote number: <b>EN/030/07 V5</b>
PHONE NO: <b>02 89255500</b>	Electronic Formats: <b>Standard Consultant Office Formats.</b>	COC SEQUENCE NUMBER (Circle) COC: ① 2 3 4 5 6 7 OF: ② ③ 4 5 6 7	
FAX NO: <b>02 89255555</b>	Results email: <b>Standard Consultant Office Reporting.</b>	RELINQUISHED BY:	RECEIVED BY: <b>SARADA</b>
PROJECT NO: <b>4242495</b>	Mobil ID/TRANS Number: <b>10/45664596</b>	DATE: <b>15/05/09</b>	DATE: <b>15.5.9</b> TIME: <b>3:45</b>
CONSULTANT PM: <b>Thomas Onus</b>	MOBIL SITE: <b>MERRIMBULA</b>		
SAMPLER: <b>LUKE ALEXANDER</b>	MOBIL GRA PM: <b>NIKKI MAKSIMOVIC</b>		

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? ☒ Yes ☐ No ☐ NA  
Free Ice / frozen Icebricks  
present upon receipt? ☐ Y ☐ N ☐ Yes ☐ No ☐ NA  
Random Sample Temperature on Receipt: **1.3** °C

## COMMENTS:

\*\* Default Type G (EPA Victoria) - Type A, B & C analytes + OC pesticides, PCBs, Total Cyanide, Total Fluoride & additional metals (Sn, Be, Co, Mo, Se)

SAMPLE DETAILS					CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED - mark each box group required (eg. A, B, C). *Dissolved metals will be assumed unless specifically requested under 'Additional Information'.											
LAB ID	SAMPLE ID	DATE	TIME	MATRIX (Solid / Water)	WATER										Total No of Containers	A TPH, BTEX, Pb	B PAH, Speciated Phenols	C VCH and Metals (As, Ba, Cd, Cr, Cu, Hg, Ni, Pb, V, Zn)	D Metals (As, Ba, Cd, Cr, Cu, Hg, Ni, Pb, V, Zn, Sb, Co, Mo, Se, Sn)	E TOC, diss. methane, nitrate, sulphate, ferrous/ferric iron	F OC & OP Pesticides	G Landfill and State EPA Specific Waste Soil Classification (see**)	OTHER -see comments if insufficient room to record details	HOLD	Additional Information e.g. elevated PID readings, gross contamination suspected, total metals required etc.	
					Soil Jar Unpres. (G) for all tests Plus Plastic Bag (for Type G)	40ml Vial Pair (G) HCl or Sodium Bisulphate (Type A, C)	0.5 or 1L (G) Unpreserved (Type A,B)	125ml (P) HNO <sub>3</sub> (Type A, C, D)*	250ml (P) Unpreserved. (Type E)	125ml HCl (Type E)	40ml Vial Pair (G) Sodium Bisulphate (Type E)	TOC vial (G) H <sub>2</sub> SO <sub>4</sub> (Type E)	1L (G) Unpreserved (Type F)	Other: e.g. 250ml NaOH for Cyanide (Type G)												
⑪	MW5-0.2-0.3	13/05/09		SOLID	X										1									X		
1	MW5-0.5-0.6	↓		↓	X										1	X	X	X								
2	MW5-1.0-1.2				X											1	X	X	X							
⑫	MW5-1.8-2.0	14/05/09			X											1									X	
⑬	MW5-2.8-3.0	↓			X											1									X	
⑭	MW5-3.8-4.0	↓			X											1									X	
3	MW6-0.2-0.3	13/05/09			X											1	X	X	X						X	
⑮	MW6-0.7-0.8	↓			X											1									X	
4	MW6-1.0-1.2	↓			X											1	X	X	X						X	
⑯	MW6-1.8-2.0	14/05/09			X											1									X	
⑰	MW6-2.8-3.0	↓			X											1									X	
⑱	MW6-3.8-4.0	↓			X											1									X	
5	MW7-0.2-0.3	13/05/09			X											1	X	X	X						X	
	MW7-0.5-0.6	↓		X											1	X	X	X								
6	MW7-1.0-1.2	↓		X											1	X	X	X								
TOTAL																										

Environmental Division  
Sydney  
Work Order  
**ES0907082**



Telephone : +61-2-8784 8555

ALS Mobil Approved Laboratories:  
Melbourne: 2-4 Westall Road, Springvale, VIC 3171.  
Ph: 03 8549 9600

Sydney: 277-289 Woodpark Rd, Smithfield, NSW 2164.  
Ph: 02 8784 8555

Brisbane: 32 Shand St. Stafford, QLD 4053.  
Ph: 07 3243 7222

131655

CONSULTANT: URS AUSTRALIA		ALS Laboratory: (Circle Laboratory - see address below)		Brisbane Melbourne Sydney	TURNAROUND REQUIREMENTS (mark Due date or 'X') Non Standard (List due dates) Standard - 5 day TAT:		ALS Mobil Quote number: EN030/07 V5		Custody Seal Intact? Yes No NA Free ice / frozen Icebricks present upon receipt? Y N Yes No NA Random Sample Temperature on Receipt # °C		
PHONE NO: 02 8925 5500 FAX NO: 02 8925 5555		Electronic Formats: Standard Consultant Office Formats. Results email: ALS Standard Consultant Office Reporting.		MOBIL TRAWO Number: 10/45664596		RELINQUISHED BY: [Signature]		RECEIVED BY:		RECEIVED BY:	
PROJECT NO: 42424195		MOBIL SITE: MERRIMBUA		MOBIL GRA PM: Niki Maksimovic		DATE: 15/05/09 TIME: 11.00		DATE: TIME:		DATE: TIME:	
COMMENTS:											

**ALS Mobil Approved Laboratories:**  
Melbourne: 2-4 Westall Road, Springvale, VIC 3171.  
Ph: 03 8549 9600

Sydney: 277-289 Woodpark Rd, Smithfield, NSW 2164.  
Ph: 02 8784 8555

Brisbane: 32 Shand St. Stafford, QLD 4053.  
Ph: 07 3243 7222

# ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



## Environmental Division

### SAMPLE RECEIPT NOTIFICATION (SRN)

#### Comprehensive Report

Work Order : ES0907082

Client : MOBIL OIL AUSTRALIA PTY LTD  
Contact : MR THOMUS ONUS  
Address : URS AUSTRALIA PTY LTD  
Level 3, 116 Miller Street  
NORTH SYDNEY NSW, AUSTRALIA  
2060

Laboratory : Environmental Division Sydney  
Contact : Charlie Pierce  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : thomus\_onus@urscorp.com  
Telephone : +61 02 8925 5500  
Facsimile : —

E-mail : charlie.pierce@alsenviro.com  
Telephone : +61-2-8784 8555  
Facsimile : +61-2-8784 8500

Project : 42424195  
Order number : 10/45664596  
C-O-C number : 131654-55  
Site : MERRIMBULA  
Sampler : LA

Page : 1 of 3  
Quote number : ES20070191 (EN/030/07 V5 5 day)  
QC Level : NEPM 1999 Schedule B(3) and ALS  
QCS3 requirement

#### Dates

Date Samples Received : 15-MAY-2009  
Client Requested Due Date : 21-MAY-2009

Issue Date : 18-MAY-2009 10:43  
Scheduled Reporting Date : 21-MAY-2009

#### Delivery Details

Mode of Delivery : Carrier  
No. of coolers/boxes : 1 HARD  
Security Seal : Not intact.

Temperature : 1.3 - Ice present  
No. of samples received : 23  
No. of samples analysed : 10

#### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.
- Sample(s) have been received within recommended holding times.
- Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).
- Sample id QC300 and QC400 were not received appropriately preserved bottle for filtered metal analysis, Lab will sub sample from Amber Glass Orange bottle provided
- ALS received two jars labelled with sample ID MW5\_0.5-0.6. After discussion with URS the correct jar was identified due to the colour and labelled as ALS#1 for analysis. The extra jar is on hold as ALS #23.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Environmental Division Sydney

Part of the ALS Laboratory Group

277-289 Woodpark Road Smithfield NSW Australia 2164

Tel. +61-2-8784 8555 Fax. +61-2-8784 8500 www.alsglobal.com

A Campbell Brothers Limited Company



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
<b>EG020A-F : Dissolved Metals by ICP-MS - Suite A</b>		
QC300_14/05/09	- Amber Glass Bottle - Unpreserved	- Clear Plastic Bottle - Nitric Acid; Filtered
QC400_14/05/09	- Amber Glass Bottle - Unpreserved	- Clear Plastic Bottle - Nitric Acid; Filtered
<b>EG035F : Dissolved Mercury by FIMS</b>		
QC300_14/05/09	- Amber Glass Bottle - Unpreserved	- Clear Plastic Bottle - Nitric Acid; Filtered
QC400_14/05/09	- Amber Glass Bottle - Unpreserved	- Clear Plastic Bottle - Nitric Acid; Filtered

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - Type A1 Mobil Type A - Soil	SOIL - Type B Mobil Type B - Soil	SOIL - Type C Mobil Type C - Soil
ES0907082-001	13-MAY-2009 15:00	MW5_0.5-0.6		✓	✓	✓
ES0907082-002	13-MAY-2009 15:00	MW5_1.0-1.2		✓	✓	✓
ES0907082-003	13-MAY-2009 15:00	MW6_0.2-0.3		✓	✓	✓
ES0907082-004	13-MAY-2009 15:00	MW6_1.0-1.2		✓	✓	✓
ES0907082-005	13-MAY-2009 15:00	MW7_0.5-0.6		✓	✓	✓
ES0907082-006	13-MAY-2009 15:00	MW7_1.0-1.2		✓	✓	✓
ES0907082-007	13-MAY-2009 15:00	QC100_13/05/09		✓	✓	✓
ES0907082-010	14-MAY-2009 15:00	TRIPBLANK_14/05/09		✓		
ES0907082-011	13-MAY-2009 15:00	MW5_0.2-0.3	✓			
ES0907082-012	14-MAY-2009 15:00	MW5_1.8-2.0	✓			
ES0907082-013	14-MAY-2009 15:00	MW5_2.8-3.0	✓			
ES0907082-014	14-MAY-2009 15:00	MW5_3.8-4.0	✓			
ES0907082-015	13-MAY-2009 15:00	MW6_0.7-0.8	✓			
ES0907082-016	14-MAY-2009 15:00	MW6_1.8-2.0	✓			
ES0907082-017	14-MAY-2009 15:00	MW6_2.8-3.0	✓			
ES0907082-018	14-MAY-2009 15:00	MW6_3.8-4.0	✓			
ES0907082-019	13-MAY-2009 15:00	MW7_0.2-0.3	✓			
ES0907082-020	14-MAY-2009 15:00	MW7_1.8-2.0	✓			
ES0907082-021	14-MAY-2009 15:00	MW7_2.8-3.0	✓			
ES0907082-022	14-MAY-2009 15:00	MW7_3.8-4.0	✓			
ES0907082-023	13-MAY-2009 15:00	MW5_0.5-0.6	✓			

Issue Date : 18-MAY-2009 10:43  
 Page : 3 of 3  
 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - Type A Mobil Type A - Water	WATER - Type B Mobil Type B - Water	WATER - Type C Mobil Type C - Water
ES0907082-008	14-MAY-2009 15:00	QC300_14/05/09	✓	✓	✓
ES0907082-009	14-MAY-2009 15:00	QC400_14/05/09	✓	✓	✓

### Requested Deliverables

#### MR THOMUS ONUS

- *AU Certificate of Analysis - NATA ( COA )	Email	thomus_onus@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental ( SRN )	Email	thomus_onus@urscorp.com
- AU Chromatogram Cover Sheet ( CHROM )	Email	thomus_onus@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep) ( QCI_NoAnon )	Email	thomus_onus@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA ( QC_NoAnon )	Email	thomus_onus@urscorp.com
- Default - Chain of Custody ( COC )	Email	thomus_onus@urscorp.com
- EDI Format - ENMRG ( ENMRG )	Email	thomus_onus@urscorp.com
- EDI Format - MRED ( MRED )	Email	thomus_onus@urscorp.com

#### PROJECT INVOICES

- A4 - AU Tax Invoice ( INV )	Email	envlims.invoicingExxonMobil@alsenviro.com
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#### THE MOBIL RESULTS

- *AU Certificate of Analysis - NATA ( COA )	Email	mobil_results@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental ( SRN )	Email	mobil_results@urscorp.com
- AU Chromatogram Cover Sheet ( CHROM )	Email	mobil_results@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep) ( QCI_NoAnon )	Email	mobil_results@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA ( QC_NoAnon )	Email	mobil_results@urscorp.com
- Default - Chain of Custody ( COC )	Email	mobil_results@urscorp.com
- EDI Format - ENMRG ( ENMRG )	Email	mobil_results@urscorp.com
- EDI Format - MRED ( MRED )	Email	mobil_results@urscorp.com

#### URS EDMS EQUIS5

- EDI Format - EQUIS V5 ( EQUIS_V5 )	Email	urs_edms@urscorp.com
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Environmental Division

**INTERPRETIVE QUALITY CONTROL REPORT**

Work Order	: ES0907082	Page	: 1 of 10
Client	: MOBIL OIL AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR THOMUS ONUS	Contact	: Charlie Pierce
Address	: URS AUSTRALIA PTY LTD Level 3, 116 Miller Street NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: thomus_onus@urscorp.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8925 5500	Telephone	: +61-2-8784 8555
Facsimile	: —	Facsimile	: +61-2-8784 8500
Project	: 42424195	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: MERRIMBULA	Date Samples Received	: 15-MAY-2009
C-O-C number	: 131654-55	Issue Date	: 21-MAY-2009
Sampler	: LA		
Order number	: 10/45664596	No. of samples received	: 23
Quote number	: EN/030/07 V5 5 day	No. of samples analysed	: 10

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Page : 2 of 10  
 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW6_0.2-0.3, MW7_0.5-0.6, QC100_13/05/09		MW5_1.0-1.2, MW6_1.0-1.2, MW7_1.0-1.2, 13-MAY-2009	---	----	----	18-MAY-2009	20-MAY-2009	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW6_0.2-0.3, MW7_0.5-0.6, QC100_13/05/09		MW5_1.0-1.2, MW6_1.0-1.2, MW7_1.0-1.2, 13-MAY-2009	18-MAY-2009	09-NOV-2009	✓	18-MAY-2009	09-NOV-2009	✓
Soil Glass Jar - Unpreserved TRIPBLANK_14/05/09		14-MAY-2009	18-MAY-2009	10-NOV-2009	✓	18-MAY-2009	10-NOV-2009	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW6_0.2-0.3, MW7_0.5-0.6, QC100_13/05/09		MW5_1.0-1.2, MW6_1.0-1.2, MW7_1.0-1.2, 13-MAY-2009	18-MAY-2009	09-NOV-2009	✓	18-MAY-2009	10-JUN-2009	✓
EP074D: Fumigants								
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW6_0.2-0.3, MW7_0.5-0.6, QC100_13/05/09		MW5_1.0-1.2, MW6_1.0-1.2, MW7_1.0-1.2, 13-MAY-2009	18-MAY-2009	27-MAY-2009	✓	18-MAY-2009	27-MAY-2009	✓



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Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW5_1.0-1.2, MW6_0.2-0.3, MW6_1.0-1.2, MW7_0.5-0.6, MW7_1.0-1.2, QC100_13/05/09	13-MAY-2009	18-MAY-2009	27-MAY-2009	✓	18-MAY-2009	27-MAY-2009	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW5_1.0-1.2, MW6_0.2-0.3, MW6_1.0-1.2, MW7_0.5-0.6, MW7_1.0-1.2, QC100_13/05/09	13-MAY-2009	18-MAY-2009	27-MAY-2009	✓	18-MAY-2009	27-MAY-2009	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW5_1.0-1.2, MW6_0.2-0.3, MW6_1.0-1.2, MW7_0.5-0.6, MW7_1.0-1.2, QC100_13/05/09	13-MAY-2009	18-MAY-2009	27-MAY-2009	✓	18-MAY-2009	27-MAY-2009	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW5_1.0-1.2, MW6_0.2-0.3, MW6_1.0-1.2, MW7_0.5-0.6, MW7_1.0-1.2, QC100_13/05/09	13-MAY-2009	19-MAY-2009	27-MAY-2009	✓	20-MAY-2009	28-JUN-2009	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved MW5_0.5-0.6, MW5_1.0-1.2, MW6_0.2-0.3, MW6_1.0-1.2, MW7_0.5-0.6, MW7_1.0-1.2, QC100_13/05/09	13-MAY-2009	19-MAY-2009	27-MAY-2009	✓	20-MAY-2009	28-JUN-2009	✓

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Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved								
MW5_0.5-0.6,	MW5_1.0-1.2,	13-MAY-2009	18-MAY-2009	27-MAY-2009	✓	18-MAY-2009	27-MAY-2009	✓
MW6_0.2-0.3,	MW6_1.0-1.2,							
MW7_0.5-0.6,	MW7_1.0-1.2,							
QC100_13/05/09								
Soil Glass Jar - Unpreserved								
MW5_0.5-0.6,	MW5_1.0-1.2,	13-MAY-2009	19-MAY-2009	27-MAY-2009	✓	20-MAY-2009	28-JUN-2009	✓
MW6_0.2-0.3,	MW6_1.0-1.2,							
MW7_0.5-0.6,	MW7_1.0-1.2,							
QC100_13/05/09								
Soil Glass Jar - Unpreserved								
TRIPBLANK_14/05/09		14-MAY-2009	18-MAY-2009	28-MAY-2009	✓	18-MAY-2009	28-MAY-2009	✓
Soil Glass Jar - Unpreserved								
TRIPBLANK_14/05/09		14-MAY-2009	19-MAY-2009	28-MAY-2009	✓	20-MAY-2009	28-JUN-2009	✓
EP080: BTEX								
Soil Glass Jar - Unpreserved								
MW5_0.5-0.6,	MW5_1.0-1.2,	13-MAY-2009	18-MAY-2009	27-MAY-2009	✓	18-MAY-2009	27-MAY-2009	✓
MW6_0.2-0.3,	MW6_1.0-1.2,							
MW7_0.5-0.6,	MW7_1.0-1.2,							
QC100_13/05/09								
Soil Glass Jar - Unpreserved								
TRIPBLANK_14/05/09		14-MAY-2009	18-MAY-2009	28-MAY-2009	✓	18-MAY-2009	28-MAY-2009	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Amber Glass Bottle - Unpreserved QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	18-MAY-2009	10-NOV-2009	✓
EG035F: Dissolved Mercury by FIMS							
Amber Glass Bottle - Unpreserved QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	20-MAY-2009	28-MAY-2009	✓
EP074D: Fumigants							
Amber VOC Vial - HCl or NaHSO4 QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	18-MAY-2009	28-MAY-2009	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - HCl or NaHSO4 QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	18-MAY-2009	28-MAY-2009	✓

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Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - HCl or NaHSO4 QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	18-MAY-2009	28-MAY-2009	✓
EP074G: Trihalomethanes							
Amber VOC Vial - HCl or NaHSO4 QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	18-MAY-2009	28-MAY-2009	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved QC300_14/05/09, QC400_14/05/09	14-MAY-2009	18-MAY-2009	21-MAY-2009	✓	19-MAY-2009	27-JUN-2009	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved QC300_14/05/09, QC400_14/05/09	14-MAY-2009	18-MAY-2009	21-MAY-2009	✓	19-MAY-2009	27-JUN-2009	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved QC300_14/05/09, QC400_14/05/09	14-MAY-2009	18-MAY-2009	21-MAY-2009	✓	20-MAY-2009	27-JUN-2009	✓
Amber VOC Vial - HCl or NaHSO4 QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	18-MAY-2009	28-MAY-2009	✓
EP080: BTEX							
Amber VOC Vial - HCl or NaHSO4 QC300_14/05/09, QC400_14/05/09	14-MAY-2009	---	---	---	18-MAY-2009	28-MAY-2009	✓

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## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	6	57	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	17	11.8	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	13	15.4	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	18	11.1	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	14.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	14.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	14.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	7	14.3	5.0	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	10.0	x	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

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Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP) - Continued							
TPH - Semivolatile Fraction	EP071	1	19	5.3	10.0	x	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.3	5.0	✓	ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	16	6.3	5.0	✓	ALS QCS3 requirement



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
Volatile Organic Compounds	EP074	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

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Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

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## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Duplicate (DUP) RPDs</b>							
EG005T: Total Metals by ICP-AES	ES0907082-005	MW7_0.5-0.6	Zinc	7440-66-6	24.1 %	0-20%	RPD exceeds LOR based limits

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP074S: VOC Surrogates	ES0907082-007	QC100_13/05/09	Toluene-D8	2037-26-5	119 %	81-117 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907082-006	MW7_1.0-1.2	Toluene-D8	2037-26-5	121 %	81-117 %	Recovery greater than upper data quality objective

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	1	19	5.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement





Environmental Division

**QUALITY CONTROL REPORT**

Work Order	: ES0907082	Page	: 1 of 20
Client	: MOBIL OIL AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR THOMUS ONUS	Contact	: Charlie Pierce
Address	: URS AUSTRALIA PTY LTD Level 3, 116 Miller Street NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: thomus_onus@urscorp.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8925 5500	Telephone	: +61-2-8784 8555
Facsimile	: ---	Facsimile	: +61-2-8784 8500
Project	: 42424195	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: MERRIMBULA	Date Samples Received	: 15-MAY-2009
C-O-C number	: 131654-55	Issue Date	: 21-MAY-2009
Sampler	: LA	No. of samples received	: 23
Order number	: 10/45664596	No. of samples analysed	: 10
Quote number	: EN/030/07 V5 5 day		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited Laboratory 825

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Accredited for compliance with ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
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### General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :      Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
            CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
            LOR = Limit of reporting  
            RPD = Relative Percentage Difference  
            # = Indicates failed QC

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## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 981602)									
ES0907030-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
ES0907073-017	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EA055: Moisture Content (QC Lot: 981603)									
ES0907082-007	QC100_13/05/09	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	12.1	12.8	5.7	0% - 50%
ES0907102-037	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 981113)									
ES0907073-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Barium	7440-39-3	10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Vanadium	7440-62-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0907073-011	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Barium	7440-39-3	10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Vanadium	7440-62-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 981115)									
ES0907073-021	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Barium	7440-39-3	10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Vanadium	7440-62-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0907082-005	MW7_0.5-0.6	EG005T: Cadmium	7440-43-9	1	mg/kg	1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	120	100	24.9	0% - 50%

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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 981115) - continued									
ES0907082-005	MW7_0.5-0.6	EG005T: Chromium	7440-47-3	2	mg/kg	8	7	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	40	38	4.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	203	216	6.0	0% - 20%
		EG005T: Vanadium	7440-62-2	5	mg/kg	8	7	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	266	209	# 24.1	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 981116)									
ES0907073-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0907082-005	MW7_0.5-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	0.0	No Limit
EP074D: Fumigants (QC Lot: 980903)									
ES0907082-001	MW5_0.5-0.6	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 980903)									
ES0907082-001	MW5_0.5-0.6	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit

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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 980903) - continued									
ES0907082-001	MW5_0.5-0.6	EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 980903)									
ES0907082-001	MW5_0.5-0.6	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 980903)									
ES0907082-001	MW5_0.5-0.6	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 982269)									
ES0907051-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0907082-001	MW5_0.5-0.6	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 982269) - continued									
ES0907082-001	MW5_0.5-0.6	EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 982269)									
ES0907051-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous		
ES0907082-001	MW5_0.5-0.6	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 980902)									
ES0907082-001	MW5_0.5-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit

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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 980902) - continued									
ES0907088-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 982268)									
ES0907051-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C29 - C36 Fraction	----	100	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C10 - C14 Fraction	----	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0907082-001	MW5_0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 980902)									
ES0907082-001	MW5_0.5-0.6	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES0907088-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
			106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous		
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 980998)									
ES0907084-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Barium	7440-39-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0907082-009	QC400_14/05/09	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 980998) - continued									
ES0907082-009	QC400_14/05/09	EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.005	0.0	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 980997)									
ES0907084-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0907082-009	QC400_14/05/09	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP074D: Fumigants (QC Lot: 981084)									
ES0907084-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0907084-005	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP074E: Halogenated Aliphatic Compounds (QC Lot: 981084)									
ES0907084-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Iodomethane	74-88-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Trichloroethene	79-01-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Dibromomethane	74-95-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Tetrachloroethene	127-18-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Pentachloroethane	76-01-7	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous





Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP074E: Halogenated Aliphatic Compounds (QC Lot: 981084) - continued											
ES0907084-001	Anonymous	EP074: Chloromethane	74-87-3	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Vinyl chloride	75-01-4	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Bromomethane	74-83-9	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Chloroethane	75-00-3	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
ES0907084-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Iodomethane	74-88-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Trichloroethene	79-01-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Dibromomethane	74-95-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Tetrachloroethene	127-18-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Pentachloroethane	76-01-7	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Chloromethane	74-87-3	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Vinyl chloride	75-01-4	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Bromomethane	74-83-9	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Chloroethane	75-00-3	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
		EP074F: Halogenated Aromatic Compounds (QC Lot: 981084)									
		ES0907084-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP074: Bromobenzene	108-86-1			5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
EP074: 2-Chlorotoluene	95-49-8			5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
EP074: 4-Chlorotoluene	106-43-4			5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
EP074: 1,3-Dichlorobenzene	541-73-1			5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
EP074: 1,4-Dichlorobenzene	106-46-7			5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 981084) - continued									
ES0907084-001	Anonymous	EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0907084-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Bromobenzene	108-86-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP074G: Trihalomethanes (QC Lot: 981084)									
ES0907084-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Bromodichloromethane	75-27-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Dibromochloromethane	124-48-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Bromoform	75-25-2	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0907084-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Bromodichloromethane	75-27-4	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Dibromochloromethane	124-48-1	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Bromoform	75-25-2	5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)A: Phenolic Compounds (QC Lot: 981334)									
ES0907084-005	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 981334)									
ES0907084-005	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: WATER

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 981334) - continued									
ES0907084-005	Anonymous	EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 981083)									
ES0907084-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0907084-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 981333)									
ES0907084-005	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C10 - C14 Fraction	----	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C29 - C36 Fraction	----	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QC Lot: 981083)									
ES0907084-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
			106-42-3						
	EP080: ortho-Xylene	95-47-6	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous	
ES0907084-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
			106-42-3						
	EP080: ortho-Xylene	95-47-6	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous	

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## Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 981115)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.1 mg/kg	105	90.1	124
EG005T: Barium	7440-39-3	10	mg/kg	<10	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	99.4	83.3	111
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.9 mg/kg	99.5	89.2	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	102	90.1	114
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.2 mg/kg	94.2	85.2	111
EG005T: Nickel	7440-02-0	2	mg/kg	<2	54.8 mg/kg	101	88.3	116
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	104 mg/kg	97.0	81.9	112
EG035T: Total Recoverable Mercury by FIMS (QCLot: 981116)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	90.6	67	118
EP074D: Fumigants (QCLot: 980903)								
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	93.1	57	129
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	89.6	68	122
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	84.2	59	127
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	87.7	53	129
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	98.3	69	121
EP074E: Halogenated Aliphatic Compounds (QCLot: 980903)								
EP074: Dichlorodifluoromethane	75-71-8	1	mg/kg	----	10 mg/kg	33.8	28.9	146
		5	mg/kg	<5	----	----	----	----
EP074: Chloromethane	74-87-3	1	mg/kg	----	10 mg/kg	46.1	43	140
		5	mg/kg	<5	----	----	----	----
EP074: Vinyl chloride	75-01-4	1	mg/kg	----	10 mg/kg	56.2	41	149
		5	mg/kg	<5	----	----	----	----
EP074: Bromomethane	74-83-9	1	mg/kg	----	10 mg/kg	97.1	44	152
		5	mg/kg	<5	----	----	----	----
EP074: Chloroethane	75-00-3	1	mg/kg	----	10 mg/kg	75.8	49	149
		5	mg/kg	<5	----	----	----	----
EP074: Trichlorofluoromethane	75-69-4	1	mg/kg	----	10 mg/kg	78.6	53	139
		5	mg/kg	<5	----	----	----	----
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	91.6	57	133
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	62.1	48	134
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	91.2	62	128
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	97.8	64	126
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	104	66	124

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: SOIL

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
CAS Number	LOR	Unit	Result				Low	High
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 980903) - continued</b>								
EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	98.0	61	125
EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	92.0	62	128
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	96.9	56	128
EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	94.7	70	124
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	96.3	65	129
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	107	67	123
EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	88.1	70	122
EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	88.6	71	121
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	99.2	64	144
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	89.2	57	125
EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	79.0	39	141
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	89.9	56	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	91.4	57	127
EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	89.7	62	126
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	87.1	26.4	144
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	93.4	51	133
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	84.4	48	136
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 980903)</b>								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	92.5	67	125
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	85.2	68	122
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	78.8	63	127
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	79.5	64	126
EP074: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	85.0	66	124
EP074: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	82.1	64	126
EP074: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	84.4	67	121
EP074: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	77.5	54	134
EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	82.8	58	132
<b>EP074G: Trihalomethanes (QCLot: 980903)</b>								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	96.6	67	123
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	95.2	60	126
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	97.2	58	124
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	98.9	57	121
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 982269)</b>								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	100	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	101	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	81.2	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	8 mg/kg	87.3	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	85.0	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	89.2	74.5	119

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 Project : 42424195



Sub-Matrix: SOIL

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 982269) - continued								
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	80.1	71.6	113
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	82.3	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	90.7	76.4	114
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	83.7	62.2	115
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	88.6	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1.0	8 mg/kg	13.3	1.23	91.6
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 982269)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	83.6	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	96.1	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	94.5	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	94.3	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	86.5	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	100	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	95.0	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	92.8	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	87.0	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	102	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	109	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	107	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	96.1	76.4	113
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	84.1	71	113
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	86.4	71.7	113
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	99.0	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 980902)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	107	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 982268)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	95.0	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	93.0	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	95.0	72.6	117
EP080: BTEX (QCLot: 980902)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	120	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	103	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	104	65.3	126
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	103	66.5	124
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	99.6	66.7	123

Sub-Matrix: WATER

Sub-Matrix: <b>WATER</b>		Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
			Spike	Spike Recovery (%)	Recovery Limits (%)

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 Work Order : ES0907082  
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 Project : 42424195



Sub-Matrix: WATER				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 980998)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.4	88	110
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	96.7	85	109
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.0	89	107
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	99.3	91	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.2	87	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.0	90	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.2	89	109
EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	98.4	91	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.5	85	115
EG035F: Dissolved Mercury by FIMS (QCLot: 980997)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	109	86	116
EP074D: Fumigants (QCLot: 981084)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	82.0	72.7	124
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	91.7	80.7	119
EP074: cis-1,3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	82.3	80.4	119
EP074: trans-1,3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	81.0	79.3	120
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	95.5	79.1	123
EP074E: Halogenated Aliphatic Compounds (QCLot: 981084)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	83.2	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	85.6	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	109	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	80.4	68.9	131
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	87.6	73.9	126
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	86.9	71.6	128
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	84.3	72.5	128
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	80.1	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	87.9	77.4	122
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	87.8	79.3	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	86.7	79.5	121
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	84.9	75.8	124
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	82.4	77.8	121
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	84.4	73.8	126
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	90.8	75.5	126
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	87.7	76.7	123
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	93.2	76.1	126
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	95.8	79.6	122
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	92.4	79.9	122
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	90.9	75	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	90.3	78.9	121



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 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074E: Halogenated Aliphatic Compounds (QCLot: 981084) - continued								
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	77.5	61.4	136
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	79.8	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	94.4	77.8	126
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	93.0	74.1	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	81.9	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	83.8	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	89.4	67.2	129
EP074F: Halogenated Aromatic Compounds (QCLot: 981084)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	92.2	80.8	119
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	90.5	79.3	119
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	84.1	78.2	120
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	83.8	79	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	87.0	78.9	120
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	87.2	79.9	119
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	89.7	82.3	116
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	80.1	67.8	129
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	91.0	68.6	128
EP074G: Trihalomethanes (QCLot: 981084)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	89.8	78.2	122
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	93.3	76.9	123
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	91.7	78.5	124
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	83.4	73.5	126
EP075(SIM)A: Phenolic Compounds (QCLot: 981334)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	2 µg/L	42.6	24.5	61.9
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	2 µg/L	81.4	63.8	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	2 µg/L	89.4	55.9	112
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	4 µg/L	71.3	42.5	114
		2.0	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	2 µg/L	83.2	62.7	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	2 µg/L	82.5	59.9	112
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	2 µg/L	77.1	59.3	122
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	2 µg/L	81.1	64.3	118
		1.0	µg/L	<1.0	----	----	----	----



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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
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Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
EP075(SIM)A: Phenolic Compounds (QCLot: 981334) - continued								
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	2 µg/L	83.2	63	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	2 µg/L	88.4	58.7	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	2 µg/L	80.3	64	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	4 µg/L	55.8	6.85	95.6
		2.0	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 981334)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	2 µg/L	87.8	58.6	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	2 µg/L	83.8	63.6	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	2 µg/L	80.7	62.2	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	2 µg/L	81.3	63.9	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	2 µg/L	94.7	62.6	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	2 µg/L	101	64.3	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	2 µg/L	95.2	63.6	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	2 µg/L	95.4	63.1	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	2 µg/L	83.6	64.1	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	2 µg/L	85.8	62.5	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	2 µg/L	75.0	61.7	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	2 µg/L	100	61.7	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	2 µg/L	92.2	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.2	µg/L	----	2 µg/L	80.4	59.9	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenzo(a.h)anthracene	53-70-3	0.2	µg/L	----	2 µg/L	84.8	61.2	117
		1.0	µg/L	<1.0	----	----	----	----

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low      High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 981334) - continued								
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	---	2 µg/L	81.5	59.1	118
		1.0	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 981083)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	86.8	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 981333)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	200 µg/L	72.0	58.9	131
EP071: C15 - C28 Fraction	----	100	µg/L	<100	200 µg/L	95.5	73.9	138
EP071: C29 - C36 Fraction	----	50	µg/L	<50	200 µg/L	87.5	62.7	131
EP080: BTEX (QCLot: 981083)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	79.4	76.2	124
EP080: Toluene	108-88-3	2	µg/L	---	10 µg/L	76.7	74.4	124
		5	µg/L	<5	----	----	----	----
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	77.0	76.1	122
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	76.1	75.7	123
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	83.2	77.9	121



## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EG005T: Total Metals by ICP-AES (QCLot: 981115)							
ES0907073-021	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 981116)							
ES0907073-021	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP074E: Halogenated Aliphatic Compounds (QCLot: 980903)							
ES0907082-001	MW5_0.5-0.6	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	102	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	85.2	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 980903)							
ES0907082-001	MW5_0.5-0.6	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	80.8	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 982269)							
ES0907051-001	Anonymous	EP075(SIM): Phenol	108-95-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Chlorophenol	95-57-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 2-Nitrophenol	88-75-5	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pentachlorophenol	87-86-5	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 982269)							
ES0907051-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QCLot: 980902)							
ES0907082-001	MW5_0.5-0.6	EP080: C6 - C9 Fraction	---	26 mg/kg	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 982268)							
ES0907051-001	Anonymous	EP071: C10 - C14 Fraction	---	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C15 - C28 Fraction	---	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C29 - C36 Fraction	---	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QCLot: 980902)							
ES0907082-001	MW5_0.5-0.6	EP080: Benzene	71-43-2	2.5 mg/kg	120	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	92.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	95.7	70	130

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: SOIL

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EP080: BTEX (QCLot: 980902) - continued							
ES0907082-001	MW5_0.5-0.6	EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	96.8	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	92.3	70	130

Sub-Matrix: WATER

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EG020F: Dissolved Metals by ICP-MS (QCLot: 980998)							
ES0907084-005	Anonymous	EG020A-F: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Barium	7440-39-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Vanadium	7440-62-2	Anonymous	Anonymous	Anonymous	Anonymous
EG020A-F: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous		
EG035F: Dissolved Mercury by FIMS (QCLot: 980997)							
ES0907084-005	Anonymous	EG035F: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP074E: Halogenated Aliphatic Compounds (QCLot: 981084)							
ES0907084-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	Anonymous	Anonymous	Anonymous	Anonymous
		EP074: Trichloroethene	79-01-6	Anonymous	Anonymous	Anonymous	Anonymous
EP074F: Halogenated Aromatic Compounds (QCLot: 981084)							
ES0907084-005	Anonymous	EP074: Chlorobenzene	108-90-7	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QCLot: 981083)							
ES0907084-005	Anonymous	EP080: C6 - C9 Fraction	----	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QCLot: 981083)							
ES0907084-005	Anonymous	EP080: Benzene	71-43-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3	Anonymous	Anonymous	Anonymous	Anonymous
			106-42-3				
EP080: ortho-Xylene	95-47-6	Anonymous	Anonymous	Anonymous	Anonymous		



Environmental Division

**CERTIFICATE OF ANALYSIS**

Work Order	: <b>ES0907082</b>	Page	: 1 of 16
Client	: <b>MOBIL OIL AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: <b>MR THOMUS ONUS</b>	Contact	: <b>Charlie Pierce</b>
Address	: <b>URS AUSTRALIA PTY LTD</b> Level 3, 116 Miller Street NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: <b>277-289 Woodpark Road Smithfield NSW Australia 2164</b>
E-mail	: <b>thomus_onus@urscorp.com</b>	E-mail	: <b>charlie.pierce@alsenviro.com</b>
Telephone	: <b>+61 02 8925 5500</b>	Telephone	: <b>+61-2-8784 8555</b>
Facsimile	: —	Facsimile	: <b>+61-2-8784 8500</b>
Project	: <b>42424195</b>	QC Level	: <b>NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
Order number	: <b>10/45664596</b>	Date Samples Received	: <b>15-MAY-2009</b>
C-O-C number	: <b>131654-55</b>	Issue Date	: <b>21-MAY-2009</b>
Sampler	: <b>LA</b>	No. of samples received	: <b>23</b>
Site	: <b>MERRIMBULA</b>	No. of samples analysed	: <b>10</b>
Quote number	: <b>EN/030/07 V5 5 day</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



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accordance with NATA  
accreditation requirements.

Accredited for compliance with  
ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Hoa Nguyen	Inorganic Chemist	Inorganics
Nanthini Coilparampil	Senior Inorganic Chemist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Organics
Wisam Abou-Maraseh	Spectroscopist	Inorganics

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Work Order : ES0907082  
Client : MOBIL OIL AUSTRALIA PTY LTD  
Project : 42424195



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG005T: Poor precision was obtained for some elements on sample ES0907082-005 due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.**
- **EG020A-F: Unpreserved aliquot was filtered and used for analysis.**
- **EP080: Level of Reporting raised for toluene due to ambient background levels in the laboratory.**

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: SOIL

				Client sample ID				
				Client sampling date / time	MW5_0.5-0.6	MW5_1.0-1.2	MW6_0.2-0.3	MW6_1.0-1.2
					13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00
Compound	CAS Number	LOR	Unit		ES0907082-001	ES0907082-002	ES0907082-003	ES0907082-004
ES0907082-005								
<b>EA055: Moisture Content</b>								
^ Moisture Content (dried @ 103°C)	---	1.0	%		12.1	13.5	22.5	12.5
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg		10	<10	90	<10
Cadmium	7440-43-9	1	mg/kg		<1	<1	1	<1
Chromium	7440-47-3	2	mg/kg		<2	<2	14	<2
Copper	7440-50-8	5	mg/kg		<5	<5	69	<5
Lead	7439-92-1	5	mg/kg		9	<5	205	<5
Nickel	7440-02-0	2	mg/kg		<2	<2	14	<2
Vanadium	7440-62-2	5	mg/kg		<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		26	<5	452	<5
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	<5	<5	<5
Chloromethane	74-87-3	5	mg/kg		<5	<5	<5	<5
Vinyl chloride	75-01-4	5	mg/kg		<5	<5	<5	<5
Bromomethane	74-83-9	5	mg/kg		<5	<5	<5	<5
Chloroethane	75-00-3	5	mg/kg		<5	<5	<5	<5
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	<5	<5	<5
1,1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
Iodomethane	74-88-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5



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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MW5_0.5-0.6	MW5_1.0-1.2	MW6_0.2-0.3	MW6_1.0-1.2	MW7_0.5-0.6
				13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00
Compound	CAS Number	LOR	Unit	ES0907082-001	ES0907082-002	ES0907082-003	ES0907082-004	ES0907082-005
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MW5_0.5-0.6	MW5_1.0-1.2	MW6_0.2-0.3	MW6_1.0-1.2	MW7_0.5-0.6
				13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00
Compound	CAS Number	LOR	Unit	ES0907082-001	ES0907082-002	ES0907082-003	ES0907082-004	ES0907082-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
<b>EP080: BTEX</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	108	113	105	108	102
Toluene-D8	2037-26-5	0.1	%	116	116	111	110	107
4-Bromofluorobenzene	460-00-4	0.1	%	104	106	100	103	95.1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	105	96.7	100	95.7	106
2-Chlorophenol-D4	93951-73-6	0.1	%	85.7	89.2	91.9	91.6	96.0
2,4,6-Tribromophenol	118-79-6	0.1	%	74.4	73.6	79.4	75.7	88.1
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	97.9	97.9	103	100	99.1

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
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## Analytical Results

Sub-Matrix: SOIL

				Client sample ID	MW5_0.5-0.6	MW5_1.0-1.2	MW6_0.2-0.3	MW6_1.0-1.2	MW7_0.5-0.6
				Client sampling date / time	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00	13-MAY-2009 15:00
Compound	CAS Number	LOR	Unit		ES0907082-001	ES0907082-002	ES0907082-003	ES0907082-004	ES0907082-005
<b>EP075(SIM)T: PAH Surrogates - Continued</b>									
Anthracene-d10	1719-06-8	0.1	%		126	122	120	127	114
4-Terphenyl-d14	1718-51-0	0.1	%		108	109	108	110	111
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		112	115	108	110	104
Toluene-D8	2037-26-5	0.1	%		99.6	99.3	94.9	94.1	91.5
4-Bromofluorobenzene	460-00-4	0.1	%		100	102	96.7	99.2	90.5

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MW7_1.0-1.2	QC100_13/05/09	TRIPBLANK_14/05/09	---	---
				13-MAY-2009 15:00	13-MAY-2009 15:00	14-MAY-2009 15:00	---	---
Compound	CAS Number	LOR	Unit	ES0907082-006	ES0907082-007	ES0907082-010	---	---
<b>EA055: Moisture Content</b>								
^ Moisture Content (dried @ 103°C)	---	1.0	%	7.6	12.1	---	---	---
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	<5	---	---	---
Barium	7440-39-3	10	mg/kg	10	10	---	---	---
Cadmium	7440-43-9	1	mg/kg	<1	<1	---	---	---
Chromium	7440-47-3	2	mg/kg	3	<2	---	---	---
Copper	7440-50-8	5	mg/kg	<5	<5	---	---	---
Lead	7439-92-1	5	mg/kg	<5	6	<5	---	---
Nickel	7440-02-0	2	mg/kg	<2	<2	---	---	---
Vanadium	7440-62-2	5	mg/kg	<5	<5	---	---	---
Zinc	7440-66-6	5	mg/kg	8	19	---	---	---
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	---	---	---
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	---	---	---
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	---	---	---
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	---	---	---
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	---	---	---
Chloromethane	74-87-3	5	mg/kg	<5	<5	---	---	---
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	---	---	---
Bromomethane	74-83-9	5	mg/kg	<5	<5	---	---	---
Chloroethane	75-00-3	5	mg/kg	<5	<5	---	---	---
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	---	---	---
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	---	---	---
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	---	---	---
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	---	---	---
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	---	---	---
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	---	---	---
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	---	---	---
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	---	---	---
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	---	---	---
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	---	---	---
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	---	---	---
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	---	---	---

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
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## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MW7_1.0-1.2	QC100_13/05/09	TRIPBLANK_14/05/09	---	---
				13-MAY-2009 15:00	13-MAY-2009 15:00	14-MAY-2009 15:00	---	---
Compound	CAS Number	LOR	Unit	ES0907082-006	ES0907082-007	ES0907082-010	---	---
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	---	---	---
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	---	---	---
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	---	---	---
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	---	---	---
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	---	---	---
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	---	---	---
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	---	---	---
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	---	---	---
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	---	---	---
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	---	---	---
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	---	---	---
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	---	---	---
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	---	---	---
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	---	---	---
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	---	---	---
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	---	---	---
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	---	---	---
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	---	---	---
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	---	---	---
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	---	---	---
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	---	---	---
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	---	---	---
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	---	---	---
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	---	---	---
Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	---	---	---

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 Client : MOBIL OIL AUSTRALIA PTY LTD  
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## Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				MW7_1.0-1.2	QC100_13/05/09	TRIPBLANK_14/05/09		
				13-MAY-2009 15:00	13-MAY-2009 15:00	14-MAY-2009 15:00		
				ES0907082-006	ES0907082-007	ES0907082-010		
Compound	CAS Number	LOR	Unit					
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	---	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	---	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	---	---	---
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	---	---	---
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	---	---	---
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	---	---
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	---	---
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	---	---
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	---	---
<b>EP080: BTEX</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	---	---
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	114	112	---	---	---
Toluene-D8	2037-26-5	0.1	%	121	119	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	110	108	---	---	---
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	99.2	100	---	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	92.4	93.0	---	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	82.8	79.4	---	---	---
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	99.0	97.3	---	---	---

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: SOIL

				Client sample ID				
				Client sampling date / time	MW7_1.0-1.2	QC100_13/05/09	TRIPBLANK_14/05/09	
					13-MAY-2009 15:00	13-MAY-2009 15:00	14-MAY-2009 15:00	
Compound	CAS Number	LOR	Unit		ES0907082-006	ES0907082-007	ES0907082-010	
<b>EP075(SIM)T: PAH Surrogates - Continued</b>								
Anthracene-d10	1719-06-8	0.1	%		130	112	---	---
4-Terphenyl-d14	1718-51-0	0.1	%		109	109	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%		118	115	116	---
Toluene-D8	2037-26-5	0.1	%		104	102	98.3	---
4-Bromofluorobenzene	460-00-4	0.1	%		107	104	103	---

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 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				QC300_14/05/09	QC400_14/05/09	---	---	---
				14-MAY-2009 15:00	14-MAY-2009 15:00	---	---	---
				ES0907082-008	ES0907082-009	---	---	---
Compound	CAS Number	LOR	Unit					
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	---	---	---
Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	---	---	---
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	---	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	---	---	---
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	---	---	---
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	---	---	---
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	---	---	---
<b>EG035F: Dissolved Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	---	---	---
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	---	---	---
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	---	---	---
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	---	---	---
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	---	---	---
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	---	---	---
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	---	---	---
Chloromethane	74-87-3	50	µg/L	<50	<50	---	---	---
Vinyl chloride	75-01-4	50	µg/L	<50	<50	---	---	---
Bromomethane	74-83-9	50	µg/L	<50	<50	---	---	---
Chloroethane	75-00-3	50	µg/L	<50	<50	---	---	---
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	---	---	---
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	---	---	---
Iodomethane	74-88-4	5	µg/L	<5	<5	---	---	---
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	---	---	---
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	---	---	---
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	---	---	---
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	---	---	---
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	---	---	---
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	---	---	---
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	---	---	---
Trichloroethene	79-01-6	5	µg/L	<5	<5	---	---	---
Dibromomethane	74-95-3	5	µg/L	<5	<5	---	---	---
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	---	---	---
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	---	---	---
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	---	---	---



Page : 13 of 16  
 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				QC300_14/05/09	QC400_14/05/09			
				14-MAY-2009 15:00	14-MAY-2009 15:00			
				ES0907082-008	ES0907082-009			
Compound	CAS Number	LOR	Unit					
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	---	---	---
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	---	---	---
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	---	---	---
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	---	---	---
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	---	---	---
Pentachloroethane	76-01-7	5	µg/L	<5	<5	---	---	---
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	---	---	---
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	---	---	---
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	---	---	---
Bromobenzene	108-86-1	5	µg/L	<5	<5	---	---	---
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	---	---	---
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	---	---	---
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	---	---	---
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	---	---	---
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	---	---	---
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	---	---	---
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	---	---	---
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	---	---	---
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	---	---	---
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	---	---	---
Bromoform	75-25-2	5	µg/L	<5	<5	---	---	---
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	---	---	---
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	---	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	---	---	---

Page : 14 of 16  
 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				QC300_14/05/09	QC400_14/05/09	---	---	---
				14-MAY-2009 15:00	14-MAY-2009 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES0907082-008	ES0907082-009	---	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	---	---	---
Indeno(1,2,3-cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	---	---	---
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	---	20	µg/L	<20	<20	---	---	---
C10 - C14 Fraction	---	50	µg/L	<50	<50	---	---	---
C15 - C28 Fraction	---	100	µg/L	<100	<100	---	---	---
C29 - C36 Fraction	---	50	µg/L	<50	<50	---	---	---
<b>EP080: BTEX</b>								
Benzene	71-43-2	1	µg/L	<1	<1	---	---	---
Toluene	108-88-3	2	µg/L	<5	<5	---	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	<2	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	---	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	<2	---	---	---
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	108	110	---	---	---
Toluene-D8	2037-26-5	0.1	%	100	100	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	93.1	94.2	---	---	---
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	33.9	33.0	---	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	77.0	73.8	---	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	86.1	87.1	---	---	---
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	75.2	72.8	---	---	---
Anthracene-d10	1719-06-8	0.1	%	86.9	84.9	---	---	---

Page : 15 of 16  
 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

				Client sample ID	QC300_14/05/09	QC400_14/05/09	---	---	---
				Client sampling date / time	14-MAY-2009 15:00	14-MAY-2009 15:00	---	---	---
Compound	CAS Number	LOR	Unit		ES0907082-008	ES0907082-009	---	---	---
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		70.3	68.2	---	---	---
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		97.4	100	---	---	---
Toluene-D8	2037-26-5	0.1	%		89.6	90.4	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%		91.0	91.6	---	---	---

Page : 16 of 16  
 Work Order : ES0907082  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2,4,6-Tribromophenol	118-79-6	19	122
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2,4,6-Tribromophenol	118-79-6	10	123
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

ALS Environmental

CLIENT / REFERENCE:

SAMPLED BY: LA

SAMPLE ID: QC10

DATE / TIME:

Major analytes include:  
ALL S  
This

Environmental

REFERENCE: Merrimack

SAMPLED BY: LA

SAMPLE ID: MWS-0.5-6

DATE / TIME: 13/05/09

Major analytes include:  
ALL SOIL PARAM  
This jar contains no

ALS Environmental

CLIENT / REFERENCE: Merrimack

SAMPLED BY: LA

SAMPLE ID: MWS-0

DATE / TIME: 13/05/09

Major analytes include:  
ALL SOIL P  
This jar contains no

131656

09E4ME0016330-1(1551286)  
URS\_MOB\_ME(QC200\_13/5/09)  


Brisbane: 32 Shand St. Stafford, QLD 4053.  
Ph: 07 3243 7222

# Sample Receipt Advice



Customer Service - 1300 552 389

**Client Name:** URS Australia Pty Ltd (Mobil)-Melbourne  
**Attention:** MR Thomus Onus  
**Client Reference number:** 42424195  
Merrimbula

**Date Received:** 19 May 2009  
**Due Date:** 26 May 2009  
**Turnaround:** Standard

**Laboratory Reference**  
**Number:** 09ENME0016330

**Your Laboratory** Kim Jolly  
**Contact:** +61 3 9538 2277

If you have any queries regarding turnaround and sample progress, technical queries or wish to make changes please contact the laboratory immediately.

## Job Information

### **Sample Integrity**

Attempt to Chill was evident	Yes
Samples correctly preserved	Yes
Organic samples had Teflon liners	Yes
Samples received with Zero Headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No
Custody Seals Intact (if used)	Yes

## Analysis Requested

<b>Analysis Requested</b>	<b>Method Code</b>	<b>Number Of Samples</b>
BTEX &(C6-C9) in Soil by P&T	1100	1
Mercury in Soil by FIMS	3400	1
Total Metals in Soil By ICP/MS	3100	1
Moisture Content	5000	1
PAH in Soil by GC	2100	1
Individual Phenols in Soil by GC	2800	1
TPH (C10 - C36) in Soil by GC	2000	1
VHCs in Soil by P&T	1300	1

## Note

- Turn Around Time starts when samples are received at the Laboratory
  - For samples received after 4pm, Turn Around Time starts the next working day
  - For samples received on the last day of holding time, notification of testing requirements must be given at least 6 hours prior to the sample receipt deadlines; Should the laboratory not receive the information in the required timeframe a suitably qualified results may still be reported.
  - Surcharges may apply for 24, 48 and 72 hour turnaround.
  - Water samples will be discarded after 4 weeks unless notified.
  - Soil samples are chilled for 1 month and will be discarded after 3 months unless notified.
  - Samples submitted for Micro analysis on a Friday may incur a \$150 surcharge and / or be analysed outside holding time (24 Hour Holding Time).
  - The Quoted Due Date does not apply to sub-contracted tests or some in-house tests. Contact your Customer Support Officer for details
- NOTE: Unless advised otherwise - Sample analysis will commence regardless of integrity issues and / or non-conformance and these will be recorded on the final report.

Logged in by : Kim Jolly

Date : Wed 20 May 2009





This document is issued in accordance with NATA's accreditation requirements.  
Accredited for compliance with ISO/IEC 17025  
Accreditation Number: 1645



## Certificate of Analysis

URS Australia Pty Ltd (Mobil)-Melbourne  
Level 6  
1 Southbank Boulevard  
SOUTHBANK VIC 3006

Attention: Thomas Onus

Project **09ENME0016330**  
Client Reference **42424195**  
Merrimbula  
Received Date **19/05/2009 12:00:00 AM**

Customer Sample ID **QC200\_13/5**  
Sample Matrix **/09**  
Labmark Sample No. **SOIL**  
Date Sampled **1551286**  
**13/05/2009**  
VOC

Test/Reference	PQL	Unit	
<b>1100 BTEX &amp; (C6-C9) in Soil by P&amp;T</b>			
4-Bromofluorobenzene - Surrogate	-	%	86
Benzene	0.2	mg/kg	<0.2
Toluene	1	mg/kg	<1.0
Ethylbenzene	1	mg/kg	<1.0
Meta- & Para- Xylene	2	mg/kg	<2.0
Ortho-Xylene	1	mg/kg	<1.0
Total Xylenes	3	mg/kg	<3.0
C6-C9 Fraction	5	mg/kg	<5.0

<b>1300 VHCs in Soil by P&amp;T</b>			
Pentafluorobenzene-Surrogate	1	%	74
Toluene-D8 - Surrogate	1	%	80
4-Bromofluorobenzene - Surrogate	1	%	88
Vinyl Chloride	1	mg/kg	<1.0
Chloroethane	1	mg/kg	<1.0
Trichlorofluoromethane	1	mg/kg	<1.0
1,1-Dichloroethene	1	mg/kg	<1.0
Methylene Chloride	5	mg/kg	<5.0
trans-1,2-Dichloroethene	1	mg/kg	<1.0
1,1-Dichloroethane	1	mg/kg	<1.0
cis-1,2-Dichloroethene	1	mg/kg	<1.0
Bromochloromethane	1	mg/kg	<1.0
Chloroform	1	mg/kg	<1.0
1,2-Dichloroethane	1	mg/kg	<1.0
1,1,1-Trichloroethane	1	mg/kg	<1.0
Carbon Tetrachloride	1	mg/kg	<1.0
Dibromomethane	1	mg/kg	<1.0
1,2-Dichloropropane	1	mg/kg	<1.0
Trichloroethene	1	mg/kg	<1.0
Bromodichloromethane	1	mg/kg	<1.0
cis-1,3-Dichloropropene	1	mg/kg	<1.0
trans-1,3-Dichloropropene	1	mg/kg	<1.0
1,1,2-Trichloroethane	1	mg/kg	<1.0
1,3-Dichloropropane	1	mg/kg	<1.0
Dibromochloromethane	1	mg/kg	<1.0

Customer Sample ID QC200\_13/5  
/09  
Sample Matrix SOIL  
Labmark Sample No. 1551286  
Date Sampled 13/05/2009

**VOC**

Test/Reference	PQL	Unit	
Tetrachloroethene	1	mg/kg	<1.0
1,1,1,2-Tetrachloroethane	1	mg/kg	<1.0
Chlorobenzene	1	mg/kg	<1.0
Bromoform	1	mg/kg	<1.0
1,1,2,2-Tetrachloroethane	1	mg/kg	<1.0
2-Chlorotoluene	1	mg/kg	<1.0
4-Chlorotoluene	1	mg/kg	<1.0
Pentachloroethane	1	mg/kg	<1.0
1,3-Dichlorobenzene	1	mg/kg	<1.0
1,4-Dichlorobenzene	1	mg/kg	<1.0
1,2-Dichlorobenzene	1	mg/kg	<1.0
Hexachloroethane	1	mg/kg	<1.0
1,2,4-Trichlorobenzene	1	mg/kg	<1.0
Hexachlorobutadiene	1	mg/kg	<1.0
1,2,3-Trichlorobenzene	1	mg/kg	<1.0

**SVOC**

Test/Reference	PQL	Unit	
<b>2100 PAH in Soil by GC</b>			
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)&(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(ah)anthracene	0.5	mg/kg	<0.5
Fluoranthene	0.5	mg/kg	<0.5
Fluorene	0.5	mg/kg	<0.5
Indeno(123-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
Sum of PAHs	0.5	mg/kg	<0.5
2-Fluorobiphenyl - Surrogate	-	%	89
p-Terphenyl-D14 - Surrogate	-	%	93
Anthracene-d10 - Surrogate	-	%	110

**2800 Individual Phenols in Soil by GC**

2,3,4,6-Tetrachlorophenol	1	mg/kg	<1
2,3,4-Trichlorophenol	0.5	mg/kg	<0.5
2,3,5,6-Tetrachlorophenol	1	mg/kg	<1
2,3,5-Trichlorophenol	0.5	mg/kg	<0.5
2,3,6-Trichlorophenol	0.5	mg/kg	<0.5
2,3-Dichlorophenol	1	mg/kg	<1
2,4 & 2,5-Dichlorophenol	2	mg/kg	<2
2,4,6-Trichlorophenol	0.5	mg/kg	<0.5
2,6-Dichlorophenol	0.5	mg/kg	<0.5
2-Chlorophenol	0.5	mg/kg	<0.5
2-Methylphenol	0.5	mg/kg	<0.5

First Reported: 25 May 2009

Date Printed: 29 May 2009

Labmark 1868 Dandenong Rd Clayton VIC Australia 3168  
30 008 127 802 Telephone: (03) 9538 2277 Facsimile: (03) 9538 2278

Page 2 of 9

Final Report Number : 397553

**Customer Sample ID** QC200\_13/5  
**Sample Matrix** /09  
**Labmark Sample No.** SOIL  
**Date Sampled** 1551286  
**SVOC** 13/05/2009

Test/Reference	PQL	Unit	
3,4-Dichlorophenol	0.5	mg/kg	<0.5
3,5-Dichlorophenol	0.5	mg/kg	<0.5
3-Chlorophenol & 4-Chlorophenol	1	mg/kg	<1
3-Methylphenol & 4-Methylphenol	1	mg/kg	<1
4-Chloro-3-methylphenol	0.5	mg/kg	<0.5
Pentachlorophenol	1	mg/kg	<1
Phenol	0.5	mg/kg	<0.5
2,4,6-Tribromophenol-Surrogate	1	%	74
<b>2000 TPH (C10 - C36) in Soil by GC</b>			
C10-C14 Fraction	10	mg/kg	<10
C15-C28 Fraction	20	mg/kg	20
C29-C36 Fraction	20	mg/kg	<20

#### Metals

Test/Reference	PQL	Unit	
<b>3400 Mercury in Soil by FIMS</b>			
Mercury	0.01	mg/kg	0.01
<b>3100 Total Metals in Soil By ICP/MS</b>			
Arsenic	2	mg/kg	<2
Barium	2	mg/kg	10
Cadmium	2	mg/kg	<2
Chromium	2	mg/kg	<2
Copper	2	mg/kg	<2
Lead	2	mg/kg	8.3
Nickel	2	mg/kg	<2
Vanadium	2	mg/kg	<2
Zinc	2	mg/kg	25

#### Miscellaneous

Test/Reference	PQL	Unit	
<b>5000 Moisture Content</b>			
% Moisture	1	%	21

#### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Analysed
1100 BTEX & (C6-C9) in Soil by P&T	Melbourne 1645	20/05/2009	22/05/2009
1300 VHCs in Soil by P&T	Melbourne 1645	21/05/2009	25/05/2009
2000 TPH (C10 - C36) in Soil by GC	Melbourne 1645	20/05/2009	21/05/2009
2100 PAH in Soil by GC	Melbourne 1645	20/05/2009	21/05/2009
2800 Individual Phenols in Soil by GC	Melbourne 1645	20/05/2009	21/05/2009
3100 Total Metals in Soil By ICP/MS	Melbourne 1645	20/05/2009	22/05/2009
3400 Mercury in Soil by FIMS	Melbourne 1645	20/05/2009	22/05/2009
5000 Moisture Content	Melbourne 1645	N/A	21/05/2009

## Labmark Internal Quality Control Review

### 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. Matrix spike recoveries are calculated on an 'As Received' basis; the parent sample result is moisture corrected after the % recovery is determined.
3. Proficiency trial results are available on request.
4. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spike or surrogate recoveries.
6. Test samples duplicated or spiked, are for this job only and are identified in the following QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered sample, unless noted otherwise.
8. When individual results are qualified in the body of a report, refer to the qualifier descriptions that follow.
9. Samples were analysed on an as received basis.
10. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sampling and Preservation Chart for Soils & Waters' for holding times. (LM-FOR-ADM-020)

For samples received on the last day of holding time, notification of testing requirements should have been received at least 48 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgement.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitability 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

### Quality Control Results

Laboratory: **EN\_METALS**

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
<b>1553382 [ Method Blank ]</b>							
3400 Mercury in Soil by FIMS							
Mercury	mg/kg	<0.01			< 0.01	Pass	
<b>1553462 [ Method Blank ]</b>							
3100 Metals in Soil - As Received							
Antimony	mg/kg	<2			< 2	Pass	
Arsenic	mg/kg	<2			< 2	Pass	
Barium	mg/kg	<2			< 2	Pass	
Beryllium	mg/kg	<2			< 2	Pass	
Boron	mg/kg	<2			< 2	Pass	
Cadmium	mg/kg	<2			< 2	Pass	
Chromium	mg/kg	<2			< 2	Pass	
Cobalt	mg/kg	<2			< 2	Pass	
Copper	mg/kg	<2			< 2	Pass	
Lead	mg/kg	<2			< 2	Pass	
Manganese	mg/kg	<2			< 2	Pass	
Molybdenum	mg/kg	<2			< 2	Pass	
Nickel	mg/kg	<2			< 2	Pass	
Selenium	mg/kg	<2			< 2	Pass	
Tin	mg/kg	<2			< 2	Pass	
Vanadium	mg/kg	<2			< 2	Pass	
Zinc	mg/kg	<2			< 2	Pass	
<b>1553383 [ Laboratory Control Sample ]</b>							
3400 Mercury in Soil by FIMS							
Mercury	mg/kg	9.0	Expected Value	Percent Recovery	80-120 %	Pass	
			10.0	90			

Laboratory: **EN\_METALS**

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
<b>1553463 [ Laboratory Control Sample ]</b>							
<b>3100 Metals in Soil - As Received</b>			<b>Expected Value</b>	<b>Percent Recovery</b>			
Antimony	mg/kg	97	100.0	97	70-130 %	Pass	
Arsenic	mg/kg	99	100.0	99	70-130 %	Pass	
Barium	mg/kg	88	100.0	88	70-130 %	Pass	
Beryllium	mg/kg	100	100.0	102	70-130 %	Pass	
Boron	mg/kg	110	100.0	109	70-130 %	Pass	
Cadmium	mg/kg	96	100.0	96	70-130 %	Pass	
Chromium	mg/kg	95	100.0	95	70-130 %	Pass	
Cobalt	mg/kg	97	100.0	97	70-130 %	Pass	
Copper	mg/kg	93	100.0	93	70-130 %	Pass	
Lead	mg/kg	89	100.0	89	70-130 %	Pass	
Manganese	mg/kg	94	100.0	94	70-130 %	Pass	
Molybdenum	mg/kg	92	100.0	92	70-130 %	Pass	
Nickel	mg/kg	97	100.0	97	70-130 %	Pass	
Selenium	mg/kg	100	100.0	102	70-130 %	Pass	
Tin	mg/kg	90	100.0	90	70-130 %	Pass	
Vanadium	mg/kg	95	100.0	95	70-130 %	Pass	
Zinc	mg/kg	98	100.0	98	70-130 %	Pass	

Laboratory: **EN\_SVOC**

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
<b>1551988 [ Method Blank ]</b>							
<b>2000 TPH (C10 - C36) in Soil by GC</b>							
C10-C14 Fraction	mg/kg	<10			< 10	Pass	
C15-C28 Fraction	mg/kg	<20			< 20	Pass	
C29-C36 Fraction	mg/kg	<20			< 20	Pass	
<b>1551990 [ Method Blank ]</b>							
<b>2100 PAH in Soil by GC</b>							
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)&(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(ah)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(123-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	
Sum of PAHs	mg/kg	<0.5			< 0.5	Pass	
2-Fluorobiphenyl - Surrogate	%	100			70-130 %	Pass	
Anthracene-d10 - Surrogate	%	108			70-130 %	Pass	
p-Terphenyl-D14 - Surrogate	%	111			70-130 %	Pass	
<b>1551989 [ Laboratory Control Sample ]</b>							
<b>2000 TPH (C10 - C36) in Soil by GC</b>			<b>Expected Value</b>	<b>Percent Recovery</b>			
C10-C14 Fraction	mg/kg	110	125.0	84	70-130 %	Pass	
C15-C28 Fraction	mg/kg	110	125.0	86	70-130 %	Pass	
C29-C36 Fraction	mg/kg	110	125.0	89	70-130 %	Pass	

Laboratory: EN\_SVOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1551991 [ Laboratory Control Sample ]							
2100 PAH in Soil by GC			Expected Value	Percent Recovery			
Acenaphthene	mg/kg	2.1	2.0	105	70-130 %	Pass	
Acenaphthylene	mg/kg	2.2	2.0	108	70-130 %	Pass	
Anthracene	mg/kg	2.2	2.0	109	70-130 %	Pass	
Benz(a)anthracene	mg/kg	2.0	2.0	100	70-130 %	Pass	
Benzo(a)pyrene	mg/kg	2.2	2.0	112	70-130 %	Pass	
Benzo(b)&(k)fluoranthene	mg/kg	4.1	4.0	103	70-130 %	Pass	
Benzo(g,h,i)perylene	mg/kg	2.0	2.0	98	70-130 %	Pass	
Chrysene	mg/kg	2.0	2.0	101	70-130 %	Pass	
Dibenz(ah)anthracene	mg/kg	1.9	2.0	96	70-130 %	Pass	
Fluoranthene	mg/kg	2.1	2.0	106	70-130 %	Pass	
Fluorene	mg/kg	2.1	2.0	105	70-130 %	Pass	
Indeno(123-cd)pyrene	mg/kg	2.0	2.0	101	70-130 %	Pass	
Naphthalene	mg/kg	2.0	2.0	102	70-130 %	Pass	
Phenanthrene	mg/kg	2.2	2.0	109	70-130 %	Pass	
Pyrene	mg/kg	2.1	2.0	105	70-130 %	Pass	
Sum of PAHs	mg/kg	33	32.0	104	70-130 %	Pass	
2-Fluorobiphenyl - Surrogate	%	100			70-130 %	Pass	
Anthracene-d10 - Surrogate	%	104			70-130 %	Pass	
p-Terphenyl-D14 - Surrogate	%	101			70-130 %	Pass	

Laboratory: EN\_VOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1552482 [ Method Blank ]							
1100 BTEX in Soil by P&T							
Benzene	mg/kg	<0.2			< 0.2	Pass	
C6-C9 Fraction	mg/kg	<5.0			< 5	Pass	
Ethylbenzene	mg/kg	<1.0			< 1	Pass	
Meta- & Para- Xylene	mg/kg	<2.0			< 2	Pass	
Ortho-Xylene	mg/kg	<1.0			< 1	Pass	
Toluene	mg/kg	<1.0			< 1	Pass	
Total Xylenes	mg/kg	<3.0			< 3	Pass	
4-Bromofluorobenzene - Surrogate	%	96			70-130 %	Pass	

Laboratory: EN\_VOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1553204 [ Method Blank ]							
1300 VOCs in Soil by P&T							
1,1,1,2-Tetrachloroethane	mg/kg	<1.0			< 1	Pass	
1,1,1-Trichloroethane	mg/kg	<1.0			< 1	Pass	
1,1,2,2-Tetrachloroethane	mg/kg	<1.0			< 1	Pass	
1,1,2-Trichloroethane	mg/kg	<1.0			< 1	Pass	
1,1-Dichloroethane	mg/kg	<1.0			< 1	Pass	
1,1-Dichloroethene	mg/kg	<1.0			< 1	Pass	
1,1-Dichloropropylene	mg/kg	<1.0			< 1	Pass	
1,2,3-Trichlorobenzene	mg/kg	<1.0			< 1	Pass	
1,2,3-Trichloropropane	mg/kg	<1.0			< 1	Pass	
1,2,4-Trichlorobenzene	mg/kg	<1.0			< 1	Pass	
1,2,4-Trimethylbenzene	mg/kg	<1.0			< 1	Pass	
1,2-Dibromo-3-chloropropane	mg/kg	<1.0			< 1	Pass	
1,2-Dibromoethane	mg/kg	<1.0			< 1	Pass	
1,2-Dichlorobenzene	mg/kg	<1.0			< 1	Pass	
1,2-Dichloroethane	mg/kg	<1.0			< 1	Pass	
1,2-Dichloropropane	mg/kg	<1.0			< 1	Pass	
1,3,5-Trimethylbenzene	mg/kg	<1.0			< 1	Pass	
1,3-Dichlorobenzene	mg/kg	<1.0			< 1	Pass	
1,3-Dichloropropane	mg/kg	<1.0			< 1	Pass	
1,4-Dichlorobenzene	mg/kg	<1.0			< 1	Pass	
2,2-Dichloropropane	mg/kg	<10.0			< 10	Pass	
2-butanone	mg/kg	<10.0			< 10	Pass	
2-Chlorotoluene	mg/kg	<1.0			< 1	Pass	
4-Chlorotoluene	mg/kg	<1.0			< 1	Pass	
4-methyl-2-pentanone	mg/kg	<10.0			< 10	Pass	
Benzene	mg/kg	<0.2			< 0.2	Pass	
Bromobenzene	mg/kg	<1.0			< 1	Pass	
Bromochloromethane	mg/kg	<1.0			< 1	Pass	
Bromodichloromethane	mg/kg	<1.0			< 1	Pass	
Bromoform	mg/kg	<1.0			< 1	Pass	
Bromomethane	mg/kg	<1.0			< 1	Pass	
Carbon Tetrachloride	mg/kg	<1.0			< 1	Pass	
Chlorobenzene	mg/kg	<1.0			< 1	Pass	
Chloroethane	mg/kg	<1.0			< 1	Pass	
Chloroform	mg/kg	<1.0			< 1	Pass	
Chloromethane	mg/kg	<1.0			< 1	Pass	
cis-1,2-Dichloroethene	mg/kg	<1.0			< 1	Pass	
cis-1,3-Dichloropropene	mg/kg	<1.0			< 1	Pass	
Dibromochloromethane	mg/kg	<1.0			< 1	Pass	
Dibromomethane	mg/kg	<1.0			< 1	Pass	
Dichlorodifluoromethane	mg/kg	<1.0			< 1	Pass	
Ethylbenzene	mg/kg	<1.0			< 1	Pass	
Hexachlorobutadiene	mg/kg	<1.0			< 1	Pass	
Hexachloroethane	mg/kg	<1.0			< 1	Pass	
Isopropylbenzene	mg/kg	<0.5			< 0.5	Pass	
Meta- & Para- Xylene	mg/kg	<2.0			< 2	Pass	
Methylene Chloride	mg/kg	<5.0			< 5	Pass	
Naphthalene	mg/kg	<1.0			< 1	Pass	
n-Butylbenzene	mg/kg	<1.0			< 1	Pass	
n-Propylbenzene	mg/kg	<1.0			< 1	Pass	
Ortho-Xylene	mg/kg	<1.0			< 1	Pass	
Pentachloroethane	mg/kg	<1.0			< 1	Pass	
p-Isopropyltoluene	mg/kg	<1.0			< 1	Pass	
sec-Butylbenzene	mg/kg	<1.0			< 1	Pass	
Styrene	mg/kg	<0.5			< 0.5	Pass	
tert-Butylbenzene	mg/kg	<1.0			< 1	Pass	
Tetrachloroethene	mg/kg	<1.0			< 1	Pass	
Toluene	mg/kg	<1.0			< 1	Pass	
Total Xylenes	mg/kg	<3.0			< 3	Pass	

First Reported: 25 May 2009

Date Printed: 29 May 2009

Labmark 1868 Dandenong Rd Clayton VIC Australia 3168  
30 008 127 802 Telephone: (03) 9538 2277 Facsimile: (03) 9538 2278

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Final Report Number : 397553

Laboratory: EN\_VOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
<b>1553204 [ Method Blank ]</b>							
<b>1300 VOCs in Soil by P&amp;T</b>							
trans-1,2-Dichloroethene	mg/kg	<1.0			< 1	Pass	
trans-1,3-Dichloropropene	mg/kg	<1.0			< 1	Pass	
Trichloroethene	mg/kg	<1.0			< 1	Pass	
Trichlorofluoromethane	mg/kg	<1.0			< 1	Pass	
Vinyl Chloride	mg/kg	<1.0			< 1	Pass	
<b>1552484 [ Laboratory Control Sample ]</b>							
<b>1100 BTEX in Soil by P&amp;T</b>							
			Expected Value	Percent Recovery			
Benzene	mg/kg	4.7	5.0	94	70-130 %	Pass	
C6-C9 Fraction	mg/kg	50	50.0	99	70-130 %	Pass	
Ethylbenzene	mg/kg	4.6	5.0	92	70-130 %	Pass	
Meta- & Para- Xylene	mg/kg	9.6	10.0	96	70-130 %	Pass	
Ortho-Xylene	mg/kg	4.8	5.0	96	70-130 %	Pass	
Toluene	mg/kg	4.7	5.0	94	70-130 %	Pass	
Total Xylenes	mg/kg	14	15.0	96	70-130 %	Pass	
4-Bromofluorobenzene - Surrogate	%	103			70-130 %	Pass	
<b>1553207 [ Laboratory Control Sample ]</b>							
<b>1300 VOCs in Soil by P&amp;T</b>							
			Expected Value	Percent Recovery			Q13
1,1,1-Trichloroethane	mg/kg	7.5	10.0	75	70-130 %	Pass	
1,1,2,2-Tetrachloroethane	mg/kg	15	10.0	148	70-130 %	Fail	
1,1,2-Trichloroethane	mg/kg	14	10.0	141	70-130 %	Fail	
1,1-Dichloroethane	mg/kg	6.4	10.0	64	70-130 %	Fail	
1,1-Dichloroethene	mg/kg	6.8	10.0	68	70-130 %	Fail	
1,2-Dichlorobenzene	mg/kg	11	10.0	106	70-130 %	Pass	
1,2-Dichloroethane	mg/kg	11	10.0	112	70-130 %	Pass	
1,2-Dichloropropane	mg/kg	11	10.0	110	70-130 %	Pass	
1,3-Dichlorobenzene	mg/kg	10.0	10.0	100	70-130 %	Pass	
1,4-Dichlorobenzene	mg/kg	10	10.0	102	70-130 %	Pass	
Benzene	mg/kg	10.0	10.0	100	70-130 %	Pass	
Bromodichloromethane	mg/kg	9.9	10.0	99	70-130 %	Pass	
Bromoform	mg/kg	11	10.0	113	70-130 %	Pass	
Carbon Tetrachloride	mg/kg	7.0	10.0	70	70-130 %	Pass	
Chlorobenzene	mg/kg	10.0	10.0	100	70-130 %	Pass	
Chloroform	mg/kg	9.0	10.0	90	70-130 %	Pass	
cis-1,3-Dichloropropene	mg/kg	11	10.0	112	70-130 %	Pass	
Dibromochloromethane	mg/kg	12	10.0	116	70-130 %	Pass	
Ethylbenzene	mg/kg	9.7	10.0	97	70-130 %	Pass	
Methylene Chloride	mg/kg	9.0	10.0	90	70-130 %	Pass	
Tetrachloroethene	mg/kg	5.7	10.0	57	70-130 %	Fail	
Toluene	mg/kg	9.7	10.0	97	70-130 %	Pass	
trans-1,2-Dichloroethene	mg/kg	7.4	10.0	74	70-130 %	Pass	
trans-1,3-Dichloropropene	mg/kg	13	10.0	127	70-130 %	Pass	
Trichloroethene	mg/kg	9.0	10.0	90	70-130 %	Pass	

**Sample Integrity**

Custody Seals Intact (if used)	Yes
Attempt to Chill was evident	Yes
Samples correctly preserved	Yes
Organic samples had Teflon liners	Yes
Samples received with Zero Headspace	Yes
Samples received within Holding Time	Yes
Some samples have been subcontracted	No



**Qualifier Codes/Comments**

Code Description

Q13 Some elements for this test have failed in the QC sample. However when at least 80% have passed the QC can be released. For any failed elements; positive results in blind samples can only be used as a guide. All other QC has passed in this test batch.

**Authorised By**

Alex Petridis

Senior Analyst - SVOC

Carol Allan

Client Services Officer

Mark Herbstreit

Senior Analyst - Metals

Accreditation Number: 1645

Helen Lei

Senior Analyst - Waters

Accreditation Number: 1645

Khoa Pham

Analyst - VOC

Accreditation Number: 1645

Olga Alieva

Analyst - SVOC

Accreditation Number: 1645

**Laboratory Manager**

David Elliott

Laboratory Manager - Melbourne



**Final Report**

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

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*The samples were not collected by Laboratory staff.*

1 of 1



Environmental Division

**SAMPLE RECEIPT NOTIFICATION (SRN)**

**Comprehensive Report**

Work Order : **ES0907497**

Client : **MOBIL OIL AUSTRALIA PTY LTD**  
Contact : **THE MOBIL RESULTS**  
Address : **URS AUSTRALIA PTY LTD**  
Level 3, 116 Miller Street  
NORTH SYDNEY NSW, AUSTRALIA  
2060

Laboratory : **Environmental Division Sydney**  
Contact : **Charlie Pierce**  
Address : **277-289 Woodpark Road Smithfield**  
NSW Australia 2164

E-mail : **mobil\_results@urscorp.com**  
Telephone : **+61 02 8925 5500**  
Facsimile : **---**

E-mail : **charlie.pierce@alsenviro.com**  
Telephone : **+61-2-8784 8555**  
Facsimile : **+61-2-8784 8500**

Project : **42424195**  
Order number : **45664596**  
C-O-C number : **---**  
Site : **MOBIL MERIMBULA**  
Sampler : **NR**

Page : **1 of 2**  
Quote number : **ES20070191 (EN/030/07 V5 5 day)**  
QC Level : **NEPM 1999 Schedule B(3) and ALS QCS3 requirement**

**Dates**

Date Samples Received : **25-MAY-2009**  
Client Requested Due Date : **01-JUN-2009**

Issue Date : **25-MAY-2009 19:34**  
Scheduled Reporting Date : **28-MAY-2009**

**Delivery Details**

Mode of Delivery : **Carrier**  
No. of coolers/boxes : **1 HARD**  
Security Seal : **Intact.**

Temperature : **5.8° C - Ice present**  
No. of samples received : **11**  
No. of samples analysed : **11**

**General Comments**

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

**Environmental Division Sydney**

Part of the **ALS Laboratory Group**

277-289 Woodpark Road Smithfield NSW Australia 2164

Tel. +61-2-8784 8555 Fax. +61-2-8784 8500 [www.alsglobal.com](http://www.alsglobal.com)

A Campbell Brothers Limited Company



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020A-F Dissolved Metals by ICPMS - Suite A	WATER - EG035F Dissolved Mercury by FIMS	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics, THM	WATER - W-04 TPH/BTEX	WATER - W-14A PAH/Phenols (SIM)	WATER - W-18 TPH(C6 - C9)/BTEX
ES0907497-001	21-MAY-2009 15:00	MW01_21/05/09	✓	✓	✓	✓	✓	
ES0907497-002	21-MAY-2009 15:00	MW02_21/05/09	✓	✓	✓	✓	✓	
ES0907497-003	21-MAY-2009 15:00	MW03_21/05/09	✓	✓	✓	✓	✓	
ES0907497-004	21-MAY-2009 15:00	MW04_21/05/09	✓	✓	✓	✓	✓	
ES0907497-005	21-MAY-2009 15:00	MW05_21/05/09	✓	✓	✓	✓	✓	
ES0907497-006	21-MAY-2009 15:00	MW06_21/05/09	✓	✓	✓	✓	✓	
ES0907497-007	21-MAY-2009 15:00	MW07_21/05/09	✓	✓	✓	✓	✓	
ES0907497-008	21-MAY-2009 15:00	QC100_21/05/09	✓	✓	✓	✓	✓	
ES0907497-009	21-MAY-2009 15:00	QCR1_21/05/09	✓	✓	✓	✓	✓	
ES0907497-010	21-MAY-2009 15:00	QCF1_21/05/09	✓	✓	✓	✓	✓	
ES0907497-011	13-MAY-2009 15:00	QCTB_21/05/09						✓

## Requested Deliverables

### MR THOMUS ONUS

- *AU Certificate of Analysis - NATA ( COA )	Email	thomus_onus@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental ( SRN )	Email	thomus_onus@urscorp.com
- AU Chromatogram Cover Sheet ( CHROM )	Email	thomus_onus@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep) ( QCI_NoAnon )	Email	thomus_onus@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA ( QC_NoAnon )	Email	thomus_onus@urscorp.com
- Default - Chain of Custody ( COC )	Email	thomus_onus@urscorp.com
- EDI Format - ENMRG ( ENMRG )	Email	thomus_onus@urscorp.com
- EDI Format - MRED ( MRED )	Email	thomus_onus@urscorp.com

### PROJECT INVOICES

- A4 - AU Tax Invoice ( INV )	Email	envlims.invoicingExxonMobil@alsen viro.com
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### THE MOBIL RESULTS

- *AU Certificate of Analysis - NATA ( COA )	Email	mobil_results@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental ( SRN )	Email	mobil_results@urscorp.com
- AU Chromatogram Cover Sheet ( CHROM )	Email	mobil_results@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep) ( QCI_NoAnon )	Email	mobil_results@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA ( QC_NoAnon )	Email	mobil_results@urscorp.com
- Default - Chain of Custody ( COC )	Email	mobil_results@urscorp.com
- EDI Format - ENMRG ( ENMRG )	Email	mobil_results@urscorp.com
- EDI Format - MRED ( MRED )	Email	mobil_results@urscorp.com

### URS EDMS EQUIS5

- EDI Format - EQUIS V5 ( EQUIS_V5 )	Email	urs_edms@urscorp.com
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Environmental Division

**INTERPRETIVE QUALITY CONTROL REPORT**

Work Order	: ES0907497	Page	: 1 of 8
Client	: MOBIL OIL AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: THE MOBIL RESULTS	Contact	: Charlie Pierce
Address	: URS AUSTRALIA PTY LTD Level 3, 116 Miller Street NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: mobil_results@urscorp.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8925 5500	Telephone	: +61-2-8784 8555
Facsimile	: ---	Facsimile	: +61-2-8784 8500
Project	: 42424195	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: MOBIL MERIMBULA	Date Samples Received	: 25-MAY-2009
C-O-C number	: ---	Issue Date	: 28-MAY-2009
Sampler	: NR	No. of samples received	: 11
Order number	: 45664596	No. of samples analysed	: 11
Quote number	: EN/030/07 V5 5 day		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

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 Work Order : ES0907497  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered							
MW01_21/05/09, MW02_21/05/09, MW03_21/05/09, MW04_21/05/09, MW05_21/05/09, MW06_21/05/09, MW07_21/05/09, QC100_21/05/09, QCR1_21/05/09	21-MAY-2009	--	---	----	27-MAY-2009	17-NOV-2009	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered							
MW01_21/05/09, MW02_21/05/09, MW03_21/05/09, MW04_21/05/09, MW05_21/05/09, MW06_21/05/09, MW07_21/05/09, QC100_21/05/09, QCR1_21/05/09	21-MAY-2009	--	---	----	27-MAY-2009	18-JUN-2009	✓
EP074D: Fumigants							
Amber VOC Vial - HCl or NaHSO4							
MW01_21/05/09, MW02_21/05/09, MW03_21/05/09, MW04_21/05/09, MW05_21/05/09, MW06_21/05/09, MW07_21/05/09, QC100_21/05/09, QCR1_21/05/09	21-MAY-2009	--	---	----	26-MAY-2009	04-JUN-2009	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - HCl or NaHSO4							
MW01_21/05/09, MW02_21/05/09, MW03_21/05/09, MW04_21/05/09, MW05_21/05/09, MW06_21/05/09, MW07_21/05/09, QC100_21/05/09, QCR1_21/05/09	21-MAY-2009	--	---	----	26-MAY-2009	04-JUN-2009	✓

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 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - HCl or NaHSO4 MW01_21/05/09, MW03_21/05/09, MW05_21/05/09, MW07_21/05/09, QCR1_21/05/09, MW02_21/05/09, MW04_21/05/09, MW06_21/05/09, QC100_21/05/09, QCF1_21/05/09	21-MAY-2009	--	---	----	26-MAY-2009	04-JUN-2009	✓
EP074G: Trihalomethanes							
Amber VOC Vial - HCl or NaHSO4 MW01_21/05/09, MW03_21/05/09, MW05_21/05/09, MW07_21/05/09, QCR1_21/05/09, MW02_21/05/09, MW04_21/05/09, MW06_21/05/09, QC100_21/05/09, QCF1_21/05/09	21-MAY-2009	--	---	----	26-MAY-2009	04-JUN-2009	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved MW01_21/05/09, MW03_21/05/09, MW02_21/05/09	21-MAY-2009	26-MAY-2009	28-MAY-2009	✓	27-MAY-2009	06-JUL-2009	✓
Amber Glass Bottle - Unpreserved MW04_21/05/09, MW06_21/05/09, QC100_21/05/09, QCF1_21/05/09, MW05_21/05/09, MW07_21/05/09, QCR1_21/05/09	21-MAY-2009	27-MAY-2009	28-MAY-2009	✓	27-MAY-2009	06-JUL-2009	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved MW01_21/05/09, MW03_21/05/09, MW02_21/05/09	21-MAY-2009	26-MAY-2009	28-MAY-2009	✓	27-MAY-2009	06-JUL-2009	✓
Amber Glass Bottle - Unpreserved MW04_21/05/09, MW06_21/05/09, QC100_21/05/09, QCF1_21/05/09, MW05_21/05/09, MW07_21/05/09, QCR1_21/05/09	21-MAY-2009	27-MAY-2009	28-MAY-2009	✓	27-MAY-2009	06-JUL-2009	✓

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Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved MW01_21/05/09, MW03_21/05/09	MW02_21/05/09,	21-MAY-2009	26-MAY-2009	28-MAY-2009	✓	27-MAY-2009	06-JUL-2009	✓
Amber Glass Bottle - Unpreserved MW04_21/05/09, MW06_21/05/09, QC100_21/05/09, QCF1_21/05/09	MW05_21/05/09, MW07_21/05/09, QCR1_21/05/09,	21-MAY-2009	27-MAY-2009	28-MAY-2009	✓	27-MAY-2009	06-JUL-2009	✓
Amber VOC Vial - HCl or NaHSO4 QCTB_21/05/09		13-MAY-2009	---	---	---	26-MAY-2009	27-MAY-2009	✓
Amber VOC Vial - HCl or NaHSO4 MW01_21/05/09, MW03_21/05/09, MW05_21/05/09, MW07_21/05/09, QCR1_21/05/09,	MW02_21/05/09, MW04_21/05/09, MW06_21/05/09, QC100_21/05/09, QCF1_21/05/09	21-MAY-2009	---	---	---	26-MAY-2009	04-JUN-2009	✓
EP080: BTEX								
Amber VOC Vial - HCl or NaHSO4 QCTB_21/05/09		13-MAY-2009	---	---	---	26-MAY-2009	27-MAY-2009	✓
Amber VOC Vial - HCl or NaHSO4 MW01_21/05/09, MW03_21/05/09, MW05_21/05/09, MW07_21/05/09, QCR1_21/05/09,	MW02_21/05/09, MW04_21/05/09, MW06_21/05/09, QC100_21/05/09, QCF1_21/05/09	21-MAY-2009	---	---	---	26-MAY-2009	04-JUN-2009	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	6.3	10.0	x	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	15	13.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	11	18.2	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.3	5.0	✓	ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	6.3	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	6.7	5.0	✓	ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	9.1	5.0	✓	ALS QCS3 requirement

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 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EP074E: Halogenated Aliphatic Compounds	1132921-010	----	Vinyl chloride	75-01-4	136 %	69.4-129%	Recovery greater than upper control limit
EP074E: Halogenated Aliphatic Compounds	1132921-010	----	Iodomethane	74-88-4	65.7 %	70.2-128%	Recovery less than lower control limit

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Matrix Spike outliers occur.

### Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP074S: VOC Surrogates	ES0907497-002	MW02_21/05/09	Toluene-D8	2037-26-5	113 %	88-110 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-004	MW04_21/05/09	Toluene-D8	2037-26-5	113 %	88-110 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-006	MW06_21/05/09	Toluene-D8	2037-26-5	111 %	88-110 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-008	QC100_21/05/09	Toluene-D8	2037-26-5	116 %	88-110 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-010	QCF1_21/05/09	Toluene-D8	2037-26-5	111 %	88-110 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-003	MW03_21/05/09	Toluene-D8	2037-26-5	113 %	88-110 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-009	QCR1_21/05/09	Toluene-D8	2037-26-5	114 %	88-110 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-010	QCF1_21/05/09	4-Bromofluorobenzene	460-00-4	116 %	86-115 %	Recovery greater than upper data quality objective
EP074S: VOC Surrogates	ES0907497-007	MW07_21/05/09	4-Bromofluorobenzene	460-00-4	117 %	86-115 %	Recovery greater than upper data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES0907497-008	QC100_21/05/09	Toluene-D8	2037-26-5	110 %	88-110 %	Recovery greater than upper data quality objective

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Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted - Continued</b>							
EP080S: TPH(V)/BTEX Surrogates	ES0907497-005	MW05_21/05/09	Toluene-D8	2037-26-5	116 %	88-110 %	Recovery greater than upper data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES0907497-008	QC100_21/05/09	4-Bromofluorobenzene	460-00-4	120 %	86-115 %	Recovery greater than upper data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES0907497-005	MW05_21/05/09	4-Bromofluorobenzene	460-00-4	117 %	86-115 %	Recovery greater than upper data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES0907497-007	MW07_21/05/09	4-Bromofluorobenzene	460-00-4	116 %	86-115 %	Recovery greater than upper data quality objective

**Outliers : Analysis Holding Time Compliance**

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

**Outliers : Frequency of Quality Control Samples**

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	1	16	6.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement



Environmental Division

**QUALITY CONTROL REPORT**

<b>Work Order</b>	: <b>ES0907497</b>	<b>Page</b>	: 1 of 13
<b>Client</b>	: <b>MOBIL OIL AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: <b>THE MOBIL RESULTS</b>	<b>Contact</b>	: Charlie Pierce
<b>Address</b>	: <b>URS AUSTRALIA PTY LTD</b> Level 3, 116 Miller Street NORTH SYDNEY NSW, AUSTRALIA 2060	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: mobil_results@urscorp.com	<b>E-mail</b>	: charlie.pierce@alsenviro.com
<b>Telephone</b>	: +61 02 8925 5500	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: —	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 42424195	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: MOBIL MERIMBULA	<b>Date Samples Received</b>	: 25-MAY-2009
<b>C-O-C number</b>	: —	<b>Issue Date</b>	: 28-MAY-2009
<b>Sampler</b>	: NR	<b>No. of samples received</b>	: 11
<b>Order number</b>	: 45664596	<b>No. of samples analysed</b>	: 11
<b>Quote number</b>	: EN/030/07 V5 5 day		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celline Conceicao	Spectroscopist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Organics
Wisam Abou-Maraseh	Spectroscopist	Inorganics

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Project : 42424195



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :      Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
         CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
         LOR = Limit of reporting  
         RPD = Relative Percentage Difference  
         # = Indicates failed QC

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## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 989297)									
ES0907497-005	MW05_21/05/09	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.015	0.016	0.0	0% - 50%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.012	0.013	8.9	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES0907497-007	MW07_21/05/09	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.019	0.020	0.0	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.026	0.026	0.0	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 989296)									
ES0907497-005	MW05_21/05/09	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES0907497-007	MW07_21/05/09	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP074D: Fumigants (QC Lot: 988774)									
ES0907497-005	MW05_21/05/09	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
ES0907497-009	QCR1_21/05/09	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 988774)									
ES0907497-005	MW05_21/05/09	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit

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Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 988774) - continued</b>									
ES0907497-005	MW05_21/05/09	EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES0907497-009	QCR1_21/05/09	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit



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Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 988774) - continued									
ES0907497-009	QCR1_21/05/09	EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 988774)									
ES0907497-005	MW05_21/05/09	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES0907497-009	QCR1_21/05/09	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 988774)									
ES0907497-005	MW05_21/05/09	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES0907497-009	QCR1_21/05/09	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 989901)									
ES0907497-005	MW05_21/05/09	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit

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Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 989901) - continued									
ES0907497-005	MW05_21/05/09	EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 989901)									
ES0907497-005	MW05_21/05/09	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	2.6	2.8	5.7	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 988773)									
ES0907497-005	MW05_21/05/09	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES0907497-009	QCR1_21/05/09	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 989902)									
ES0907497-005	MW05_21/05/09	EP071: C15 - C28 Fraction	----	100	µg/L	200	200	0.000000	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.000000	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	140	160	9.876543	No Limit
EP080: BTEX (QC Lot: 988773)									
ES0907497-005	MW05_21/05/09	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<5	<5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit

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 Project : 42424195



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEX (QC Lot: 988773) - continued</b>									
ES0907497-005	MW05_21/05/09	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES0907497-009	QCR1_21/05/09	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<5	<5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit

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 Work Order : ES0907497  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020F: Dissolved Metals by ICP-MS (QCLot: 989297)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.1	88	110
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	99.4	85	109
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.5	89	107
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	104	91	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.0	87	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.3	90	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	102	89	109
EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	102	91	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	105	85	115
EG035F: Dissolved Mercury by FIMS (QCLot: 989296)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	104	86	116
EP074D: Fumigants (QCLot: 988774)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	105	72.7	124
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	96.5	80.7	119
EP074: cis-1,3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	98.0	80.4	119
EP074: trans-1,3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	103	79.3	120
EP074E: Halogenated Aliphatic Compounds (QCLot: 988774)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	112	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	99.3	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	# 136	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	95.5	68.9	131
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	96.5	73.9	126
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	106	71.6	128
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	101	72.5	128
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	# 65.7	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	98.7	77.4	122
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	98.1	79.3	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	102	79.5	121
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	108	75.8	124
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	102	77.8	121
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	108	73.8	126
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	103	75.5	126
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	103	76.7	123
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	102	76.1	126

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 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



Sub-Matrix: WATER

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High
EP074E: Halogenated Aliphatic Compounds (QCLot: 988774) - continued								
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	101	79.6	122
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	97.7	79.9	122
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	108	75	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	109	78.9	121
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	116	61.4	136
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	87.2	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	92.6	77.8	126
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	95.9	74.1	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	110	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	118	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	92.2	67.2	129
EP074F: Halogenated Aromatic Compounds (QCLot: 988774)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	99.8	80.8	119
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	107	79.3	119
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	118	78.2	120
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	116	79	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	106	78.9	120
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	108	79.9	119
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	101	82.3	116
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	109	67.8	129
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	104	68.6	128
EP074G: Trihalomethanes (QCLot: 988774)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	103	78.2	122
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	114	76.9	123
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	103	78.5	124
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	94.8	73.5	126
EP075(SIM)A: Phenolic Compounds (QCLot: 989901)								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	2 µg/L	42.0	24.5	61.9
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	2 µg/L	91.8	63.8	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	2 µg/L	80.5	55.9	112
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	4 µg/L	77.0	42.5	114
		2.0	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	2 µg/L	85.7	62.7	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	2 µg/L	96.0	59.9	112
		1.0	µg/L	<1.0	----	----	----	----

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Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)A: Phenolic Compounds (QCLot: 989901) - continued								
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	2 µg/L	97.8	59.3	122
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	2 µg/L	100	64.3	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	2 µg/L	98.6	63	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	2 µg/L	96.0	58.7	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	2 µg/L	99.4	64	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	4 µg/L	36.2	6.85	95.6
		2.0	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 989901)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	2 µg/L	102	58.6	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	2 µg/L	105	63.6	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	2 µg/L	97.4	62.2	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	2 µg/L	103	63.9	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	2 µg/L	103	62.6	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	2 µg/L	92.2	64.3	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	2 µg/L	104	63.6	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	2 µg/L	96.0	63.1	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	2 µg/L	97.5	64.1	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	2 µg/L	98.4	62.5	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	2 µg/L	97.9	61.7	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	2 µg/L	92.8	61.7	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	2 µg/L	96.6	63.3	117
		0.5	µg/L	<0.5	----	----	----	----

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Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low      High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 989901) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	2 µg/L	83.7	59.9	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	2 µg/L	81.5	61.2	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	2 µg/L	83.1	59.1	118
		1.0	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 988773)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	106	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 989902)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	95.0	58.9	131
EP071: C15 - C28 Fraction	----	100	µg/L	<100	400 µg/L	124	73.9	138
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	102	62.7	131
EP080: BTEX (QCLot: 988773)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	114	76.2	124
EP080: Toluene	108-88-3	2	µg/L	----	10 µg/L	117	74.4	124
		5	µg/L	<5	----	----	----	----
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	116	76.1	122
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	111	75.7	123
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	118	77.9	121

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 Project : 42424195



## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EG020F: Dissolved Metals by ICP-MS (QCLot: 989297)							
ES0907497-005	MW05_21/05/09	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	101	70	130
		EG020A-F: Barium	7440-39-3	0.2 mg/L	104	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	102	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	104	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	104	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	97.5	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	103	70	130
		EG020A-F: Vanadium	7440-62-2	0.2 mg/L	104	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	103	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 989296)							
ES0907497-005	MW05_21/05/09	EG035F: Mercury	7439-97-6	0.0100 mg/L	90.1	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 988774)							
ES0907497-005	MW05_21/05/09	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	110	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	82.2	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 988774)							
ES0907497-005	MW05_21/05/09	EP074: Chlorobenzene	108-90-7	25 µg/L	88.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 989901)							
ES0907497-005	MW05_21/05/09	EP075(SIM): Phenol	108-95-2	20 µg/L	33.7	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	93.6	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	89.8	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	20 µg/L	94.8	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	93.3	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 989901)							
ES0907497-005	MW05_21/05/09	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	100	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	104	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 988773)							
ES0907497-005	MW05_21/05/09	EP080: C6 - C9 Fraction	---	250 µg/L	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 989902)							
ES0907497-005	MW05_21/05/09	EP071: C10 - C14 Fraction	----	400 µg/L	129	70	130
		EP071: C15 - C28 Fraction	----	400 µg/L	105	70	130
		EP071: C29 - C36 Fraction	----	400 µg/L	110	70	130
EP080: BTEX (QCLot: 988773)							
ES0907497-005	MW05_21/05/09	EP080: Benzene	71-43-2	25 µg/L	88.4	70	130



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Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report		
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) LowHigh
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			
EP080: BTEX (QCLot: 988773) - continued						
ES0907497-005	MW05_21/05/09	EP080: Toluene	108-88-3	25 µg/L	99.4	70130
		EP080: Ethylbenzene	100-41-4	25 µg/L	89.8	70130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	97.0	70130
		EP080: ortho-Xylene	95-47-6	25 µg/L	91.0	70130



Environmental Division

**CERTIFICATE OF ANALYSIS**

Work Order	: ES0907497	Page	: 1 of 13
Client	: MOBIL OIL AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: THE MOBIL RESULTS	Contact	: Charlie Pierce
Address	: URS AUSTRALIA PTY LTD Level 3, 116 Miller Street NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: mobil_results@urscorp.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8925 5500	Telephone	: +61-2-8784 8555
Facsimile	: ---	Facsimile	: +61-2-8784 8500
Project	: 42424195	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 45664596		
C-O-C number	: ---	Date Samples Received	: 25-MAY-2009
Sampler	: NR	Issue Date	: 28-MAY-2009
Site	: MOBIL MERIMBULA		
Quote number	: EN/030/07 V5 5 day	No. of samples received	: 11
		No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

This document is issued in  
accordance with NATA  
accreditation requirements.

Accredited for compliance with  
ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Spectroscopist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Organics
Wisam Abou-Maraseh	Spectroscopist	Inorganics

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**Environmental Division Sydney**


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Work Order : ES0907497  
Client : MOBIL OIL AUSTRALIA PTY LTD  
Project : 42424195



### General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG020A-F: LOR raised for Chromium due to matrix interference.**
- **EP071: The results for samples ES0907497\_1,2,3,4,5,6,7,8,9,10 had been confirmed by re-split and re-analysis. Insufficient sample for re-extraction**
- **EP080: Level of reporting raised for toluene due to ambient background levels in the laboratory.**
- **EP080: Results for sample MW07\_21/05/09 confirmed by re-analysis.**

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 Work Order : ES0907497  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				MW01_21/05/09	MW02_21/05/09	MW03_21/05/09	MW04_21/05/09	MW05_21/05/09
				21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
Compound	CAS Number	LOR	Unit	ES0907497-001	ES0907497-002	ES0907497-003	ES0907497-004	ES0907497-005
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	0.028	0.009	0.014	0.023	0.003
Barium	7440-39-3	0.001	mg/L	0.054	0.015	0.022	0.028	0.015
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	0.005	0.005	0.003	0.002
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.001	0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.016	0.014	0.218	0.670	0.012
<b>EG035F: Dissolved Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5

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 Work Order : ES0907497  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				MW01_21/05/09	MW02_21/05/09	MW03_21/05/09	MW04_21/05/09	MW05_21/05/09
				21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
Compound	CAS Number	LOR	Unit	ES0907497-001	ES0907497-002	ES0907497-003	ES0907497-004	ES0907497-005
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	1.4	2.6
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0

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## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				MW01_21/05/09	MW02_21/05/09	MW03_21/05/09	MW04_21/05/09	MW05_21/05/09
				21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
Compound	CAS Number	LOR	Unit	ES0907497-001	ES0907497-002	ES0907497-003	ES0907497-004	ES0907497-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	60	<50
C15 - C28 Fraction	----	100	µg/L	800	200	300	600	200
C29 - C36 Fraction	----	50	µg/L	200	<50	<50	140	140
<b>EP080: BTEX</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<5	<5	<5	<5	<5
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.0	94.4	105	94.3	110
Toluene-D8	2037-26-5	0.1	%	104	113	113	113	108
4-Bromofluorobenzene	460-00-4	0.1	%	107	113	112	113	114
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	31.7	28.3	29.2	30.7	32.0
2-Chlorophenol-D4	93951-73-6	0.1	%	83.1	70.3	82.7	69.6	82.5
2,4,6-Tribromophenol	118-79-6	0.1	%	104	93.7	104	93.7	88.0
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	84.8	91.0	98.9	84.1	83.5
Anthracene-d10	1719-06-8	0.1	%	90.8	83.4	92.6	79.3	86.7
4-Terphenyl-d14	1718-51-0	0.1	%	101	101	109	92.0	103

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## Analytical Results

Sub-Matrix: WATER

				Client sample ID	MW01_21/05/09	MW02_21/05/09	MW03_21/05/09	MW04_21/05/09	MW05_21/05/09
				Client sampling date / time	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
Compound	CAS Number	LOR	Unit		ES0907497-001	ES0907497-002	ES0907497-003	ES0907497-004	ES0907497-005
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		96.0	94.3	105	94.2	110
Toluene-D8	2037-26-5	0.1	%		100	109	109	109	116
4-Bromofluorobenzene	460-00-4	0.1	%		106	110	110	111	117



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## Analytical Results

Sub-Matrix: WATER

				Client sample ID	MW06_21/05/09	MW07_21/05/09	QC100_21/05/09	QCR1_21/05/09	QCF1_21/05/09
				Client sampling date / time	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
Compound	CAS Number	LOR	Unit		ES0907497-006	ES0907497-007	ES0907497-008	ES0907497-009	ES0907497-010
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Arsenic	7440-38-2	0.001	mg/L		0.010	0.002	0.003	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L		0.014	0.019	0.014	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		0.006	<0.005	0.002	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L		0.02	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		0.022	0.026	0.015	<0.005	<0.005
<b>EG035F: Dissolved Mercury by FIMS</b>									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<b>EP074D: Fumigants</b>									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
<b>EP074E: Halogenated Aliphatic Compounds</b>									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L		<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	<5	<5

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 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				MW06_21/05/09	MW07_21/05/09	QC100_21/05/09	QCR1_21/05/09	QCF1_21/05/09
				21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
Compound	CAS Number	LOR	Unit	ES0907497-006	ES0907497-007	ES0907497-008	ES0907497-009	ES0907497-010
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	1.2	4.2	1.8	3.6	2.3
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0

Page : 10 of 13  
 Work Order : ES0907497  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

				Client sample ID	MW06_21/05/09	MW07_21/05/09	QC100_21/05/09	QCR1_21/05/09	QCF1_21/05/09
				Client sampling date / time	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
Compound	CAS Number	LOR	Unit		ES0907497-006	ES0907497-007	ES0907497-008	ES0907497-009	ES0907497-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	260	<50	160	100
C15 - C28 Fraction	----	100	µg/L		400	2400	200	100	200
C29 - C36 Fraction	----	50	µg/L		140	450	130	<50	<50
<b>EP080: BTEX</b>									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<5	<5	<5	<5	<5
Ethylbenzene	100-41-4	2	µg/L		<2	10	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
<b>EP074S: VOC Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		95.2	104	106	99.7	97.5
Toluene-D8	2037-26-5	0.1	%		111	108	116	114	111
4-Bromofluorobenzene	460-00-4	0.1	%		114	117	113	111	116
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.1	%		31.2	29.0	31.6	28.6	29.7
2-Chlorophenol-D4	93951-73-6	0.1	%		69.2	72.6	68.5	71.2	71.9
2,4,6-Tribromophenol	118-79-6	0.1	%		94.8	91.3	91.0	84.0	81.6
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.1	%		86.2	74.7	80.0	79.0	78.6
Anthracene-d10	1719-06-8	0.1	%		80.4	72.7	78.8	75.3	76.9
4-Terphenyl-d14	1718-51-0	0.1	%		93.9	84.9	88.4	87.8	88.3

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Work Order : ES0907497  
Client : MOBIL OIL AUSTRALIA PTY LTD  
Project : 42424195



### Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				Client sampling date / time	MW06_21/05/09	MW07_21/05/09	QC100_21/05/09	QCR1_21/05/09
					21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00	21-MAY-2009 15:00
					ES0907497-006	ES0907497-007	ES0907497-008	ES0907497-010
Compound	CAS Number	LOR	Unit					
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%		95.0	103	106	99.6
Toluene-D8	2037-26-5	0.1	%		107	105	110	100
4-Bromofluorobenzene	460-00-4	0.1	%		111	116	120	111

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 Work Order : ES0907497  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



## Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				Client sampling date / time				
				QCTB_21/05/09	---	---	---	---
				13-MAY-2009 15:00	---	---	---	---
Compound	CAS Number	LOR	Unit	ES0907497-011	---	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	---	20	µg/L	<20	---	---	---	---
<b>EP080: BTEX</b>								
Benzene	71-43-2	1	µg/L	<1	---	---	---	---
Toluene	108-88-3	2	µg/L	<5	---	---	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	---	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	---	---	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	---	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	102	---	---	---	---
Toluene-D8	2037-26-5	0.1	%	108	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	102	---	---	---	---

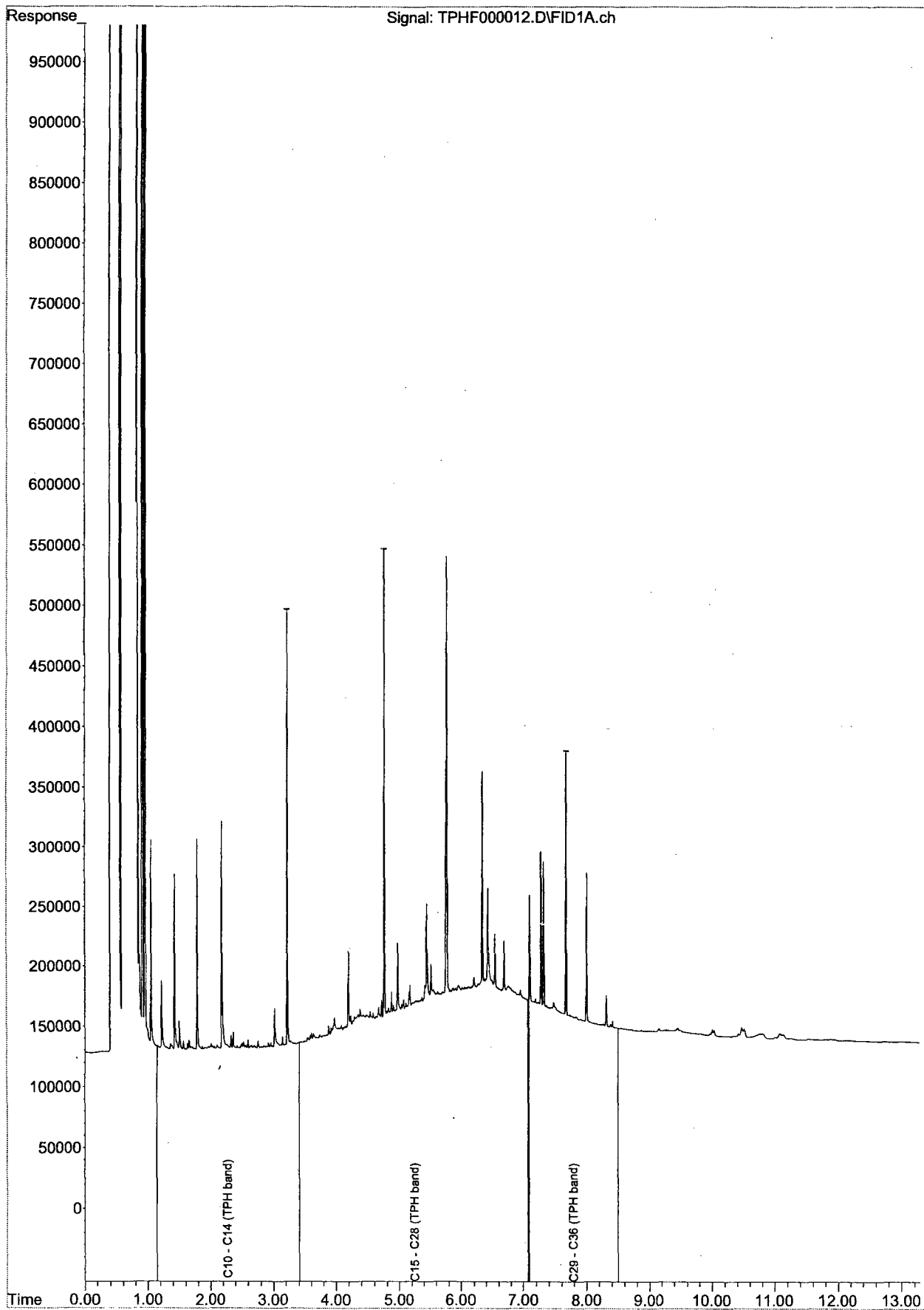
Page : 13 of 13  
 Work Order : ES0907497  
 Client : MOBIL OIL AUSTRALIA PTY LTD  
 Project : 42424195



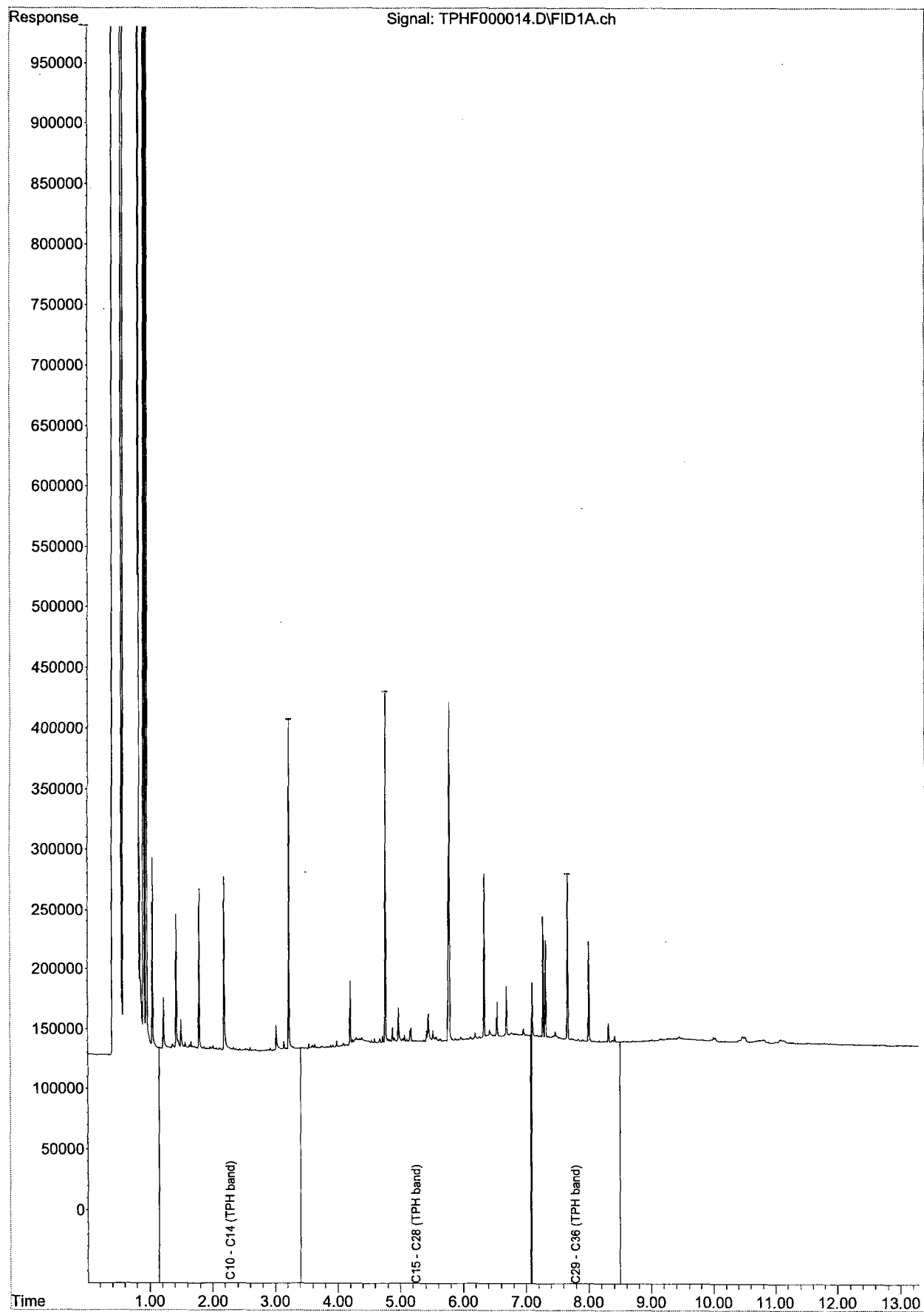
## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2,4,6-Tribromophenol	118-79-6	10	123
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

Data File : TPHF000012.D  
Laboratory Number: ES0907497-001  
Sample ID : MW01\_21/05/09  
Date Acquired : 27-May-2009, 17:35:04

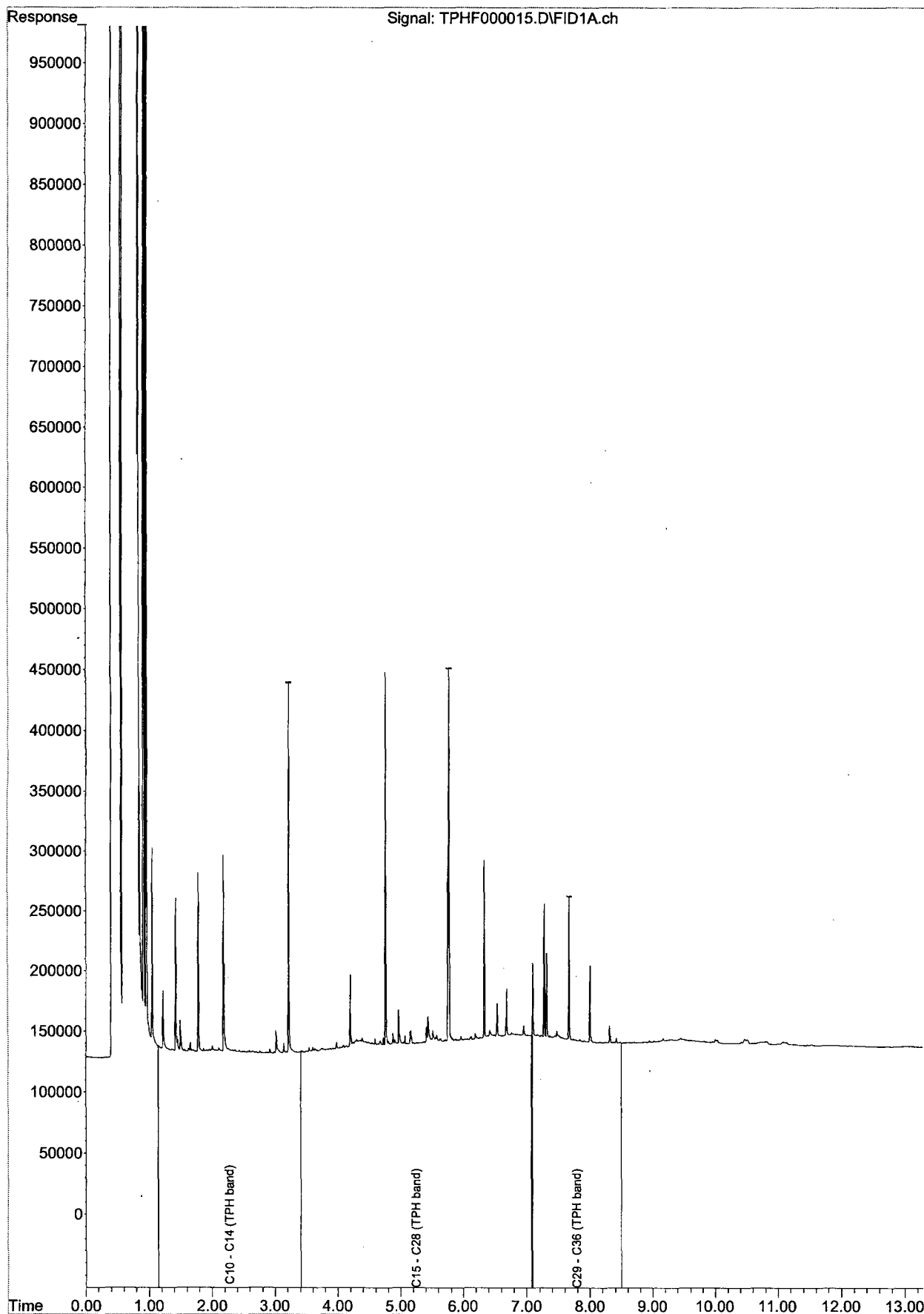


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Laboratory Number: ES0907497-002  
Sample ID : MW02\_21/05/09  
Date Acquired : 27-May-2009, 18:12:56

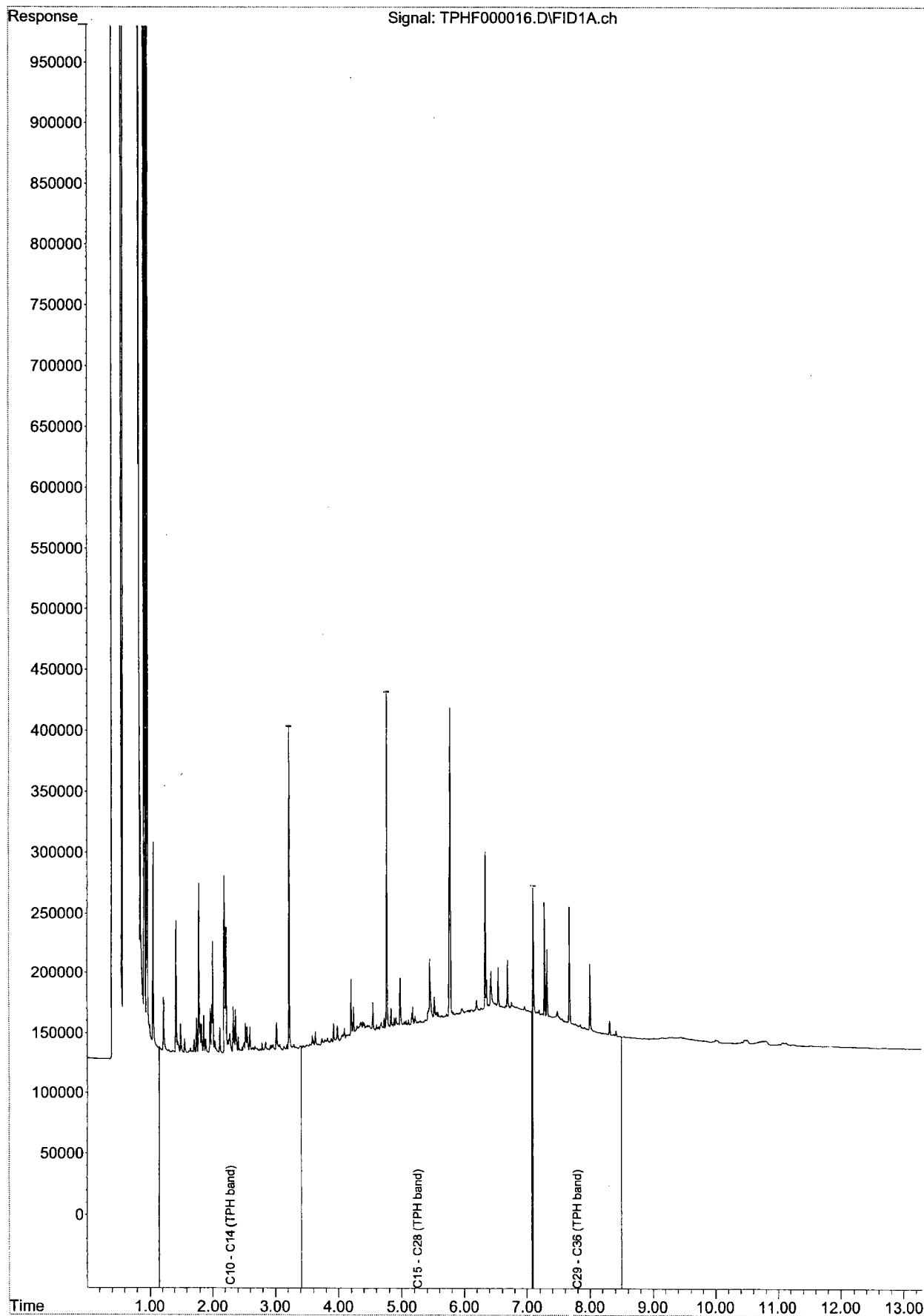




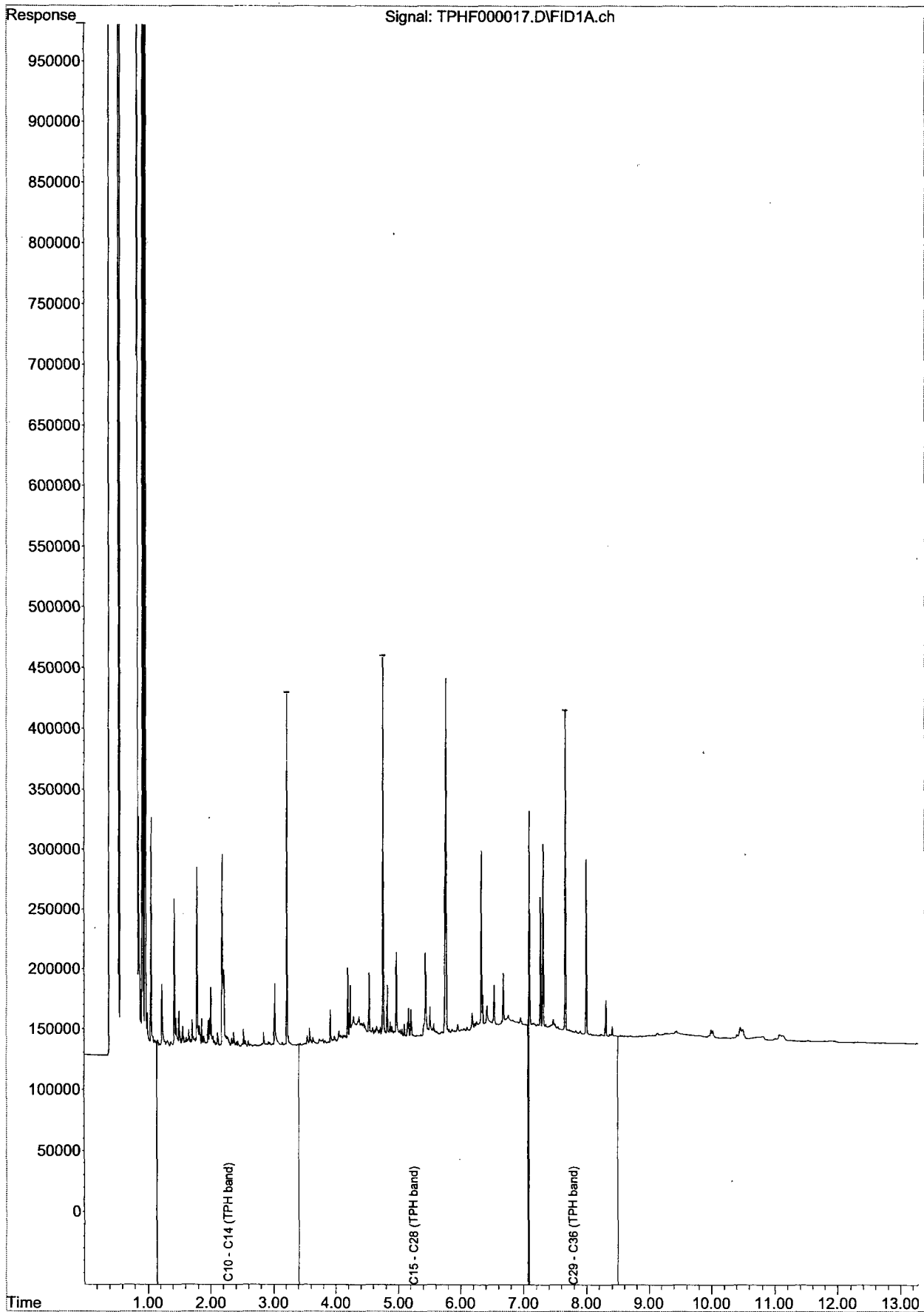
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Laboratory Number: ES0907497-003  
Sample ID : MW03\_21/05/09  
Date Acquired : 27-May-2009, 18:31:53



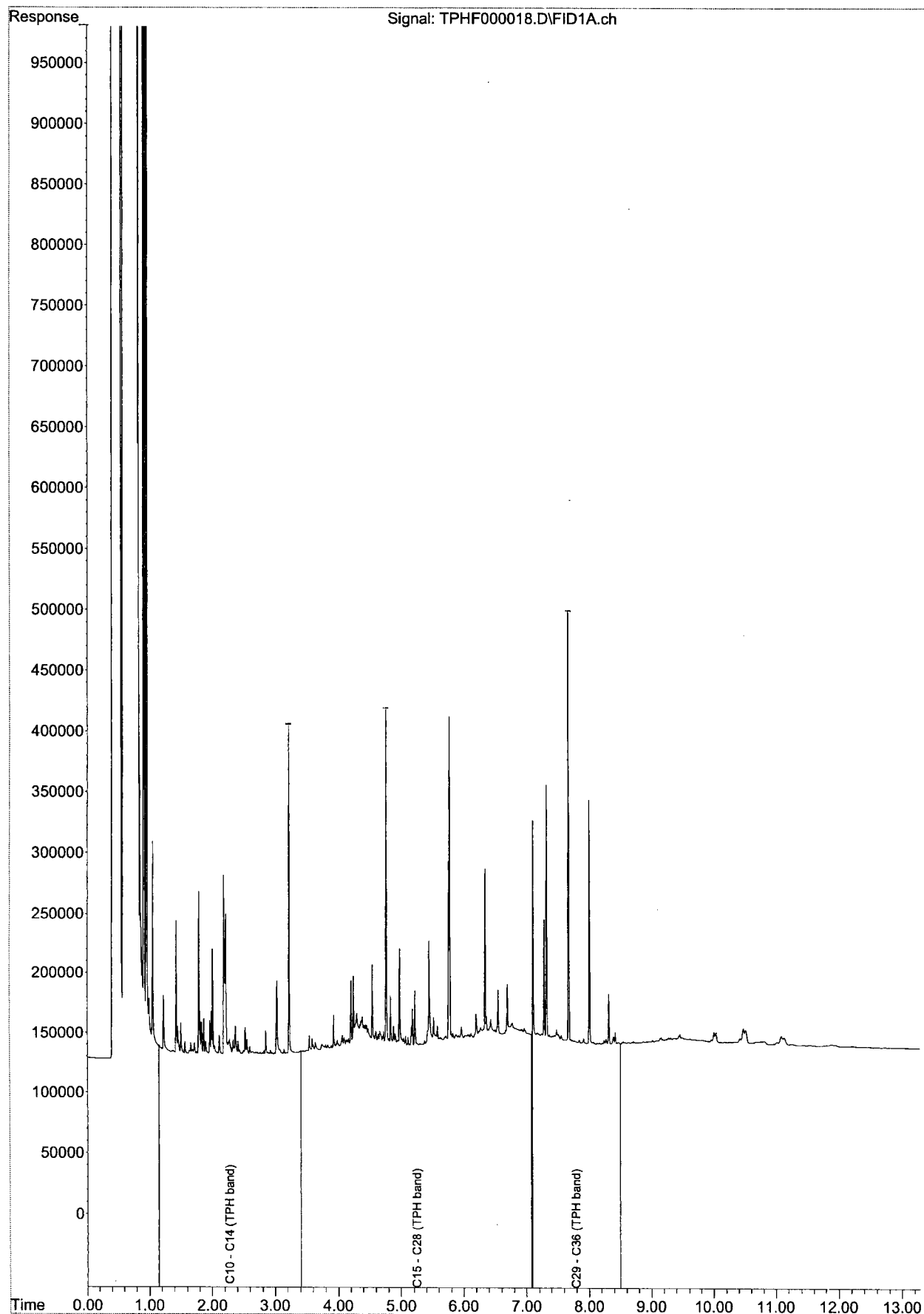
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Laboratory Number: ES0907497-004  
Sample ID : MW04\_21/05/09  
Date Acquired : 27-May-2009, 18:50:49



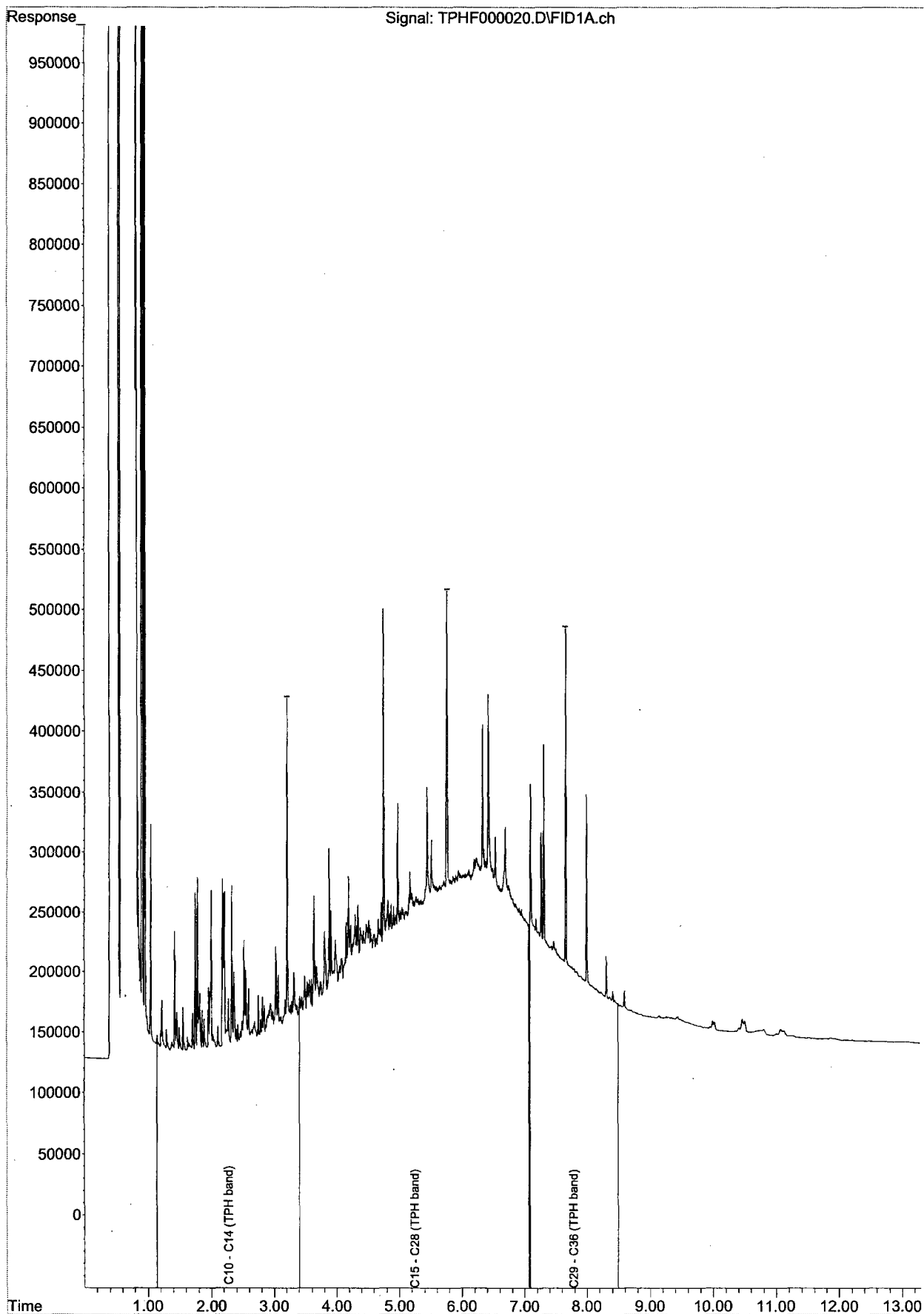
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Laboratory Number: ES0907497-005  
Sample ID : MW05\_21/05/09  
Date Acquired : 27-May-2009, 19:09:57



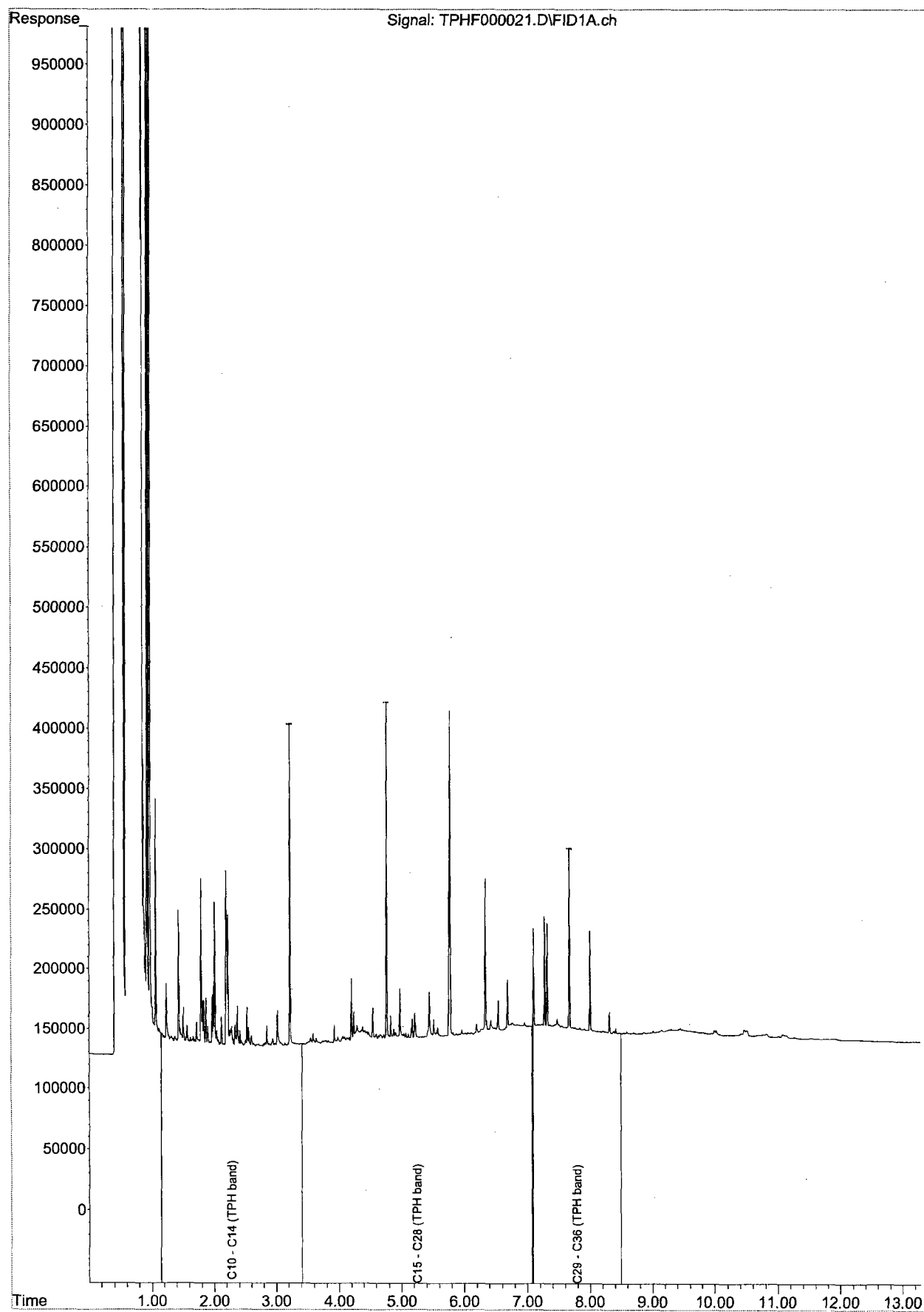
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Laboratory Number: ES0907497-006  
Sample ID : MW06\_21/05/09  
Date Acquired : 27-May-2009, 19:28:51



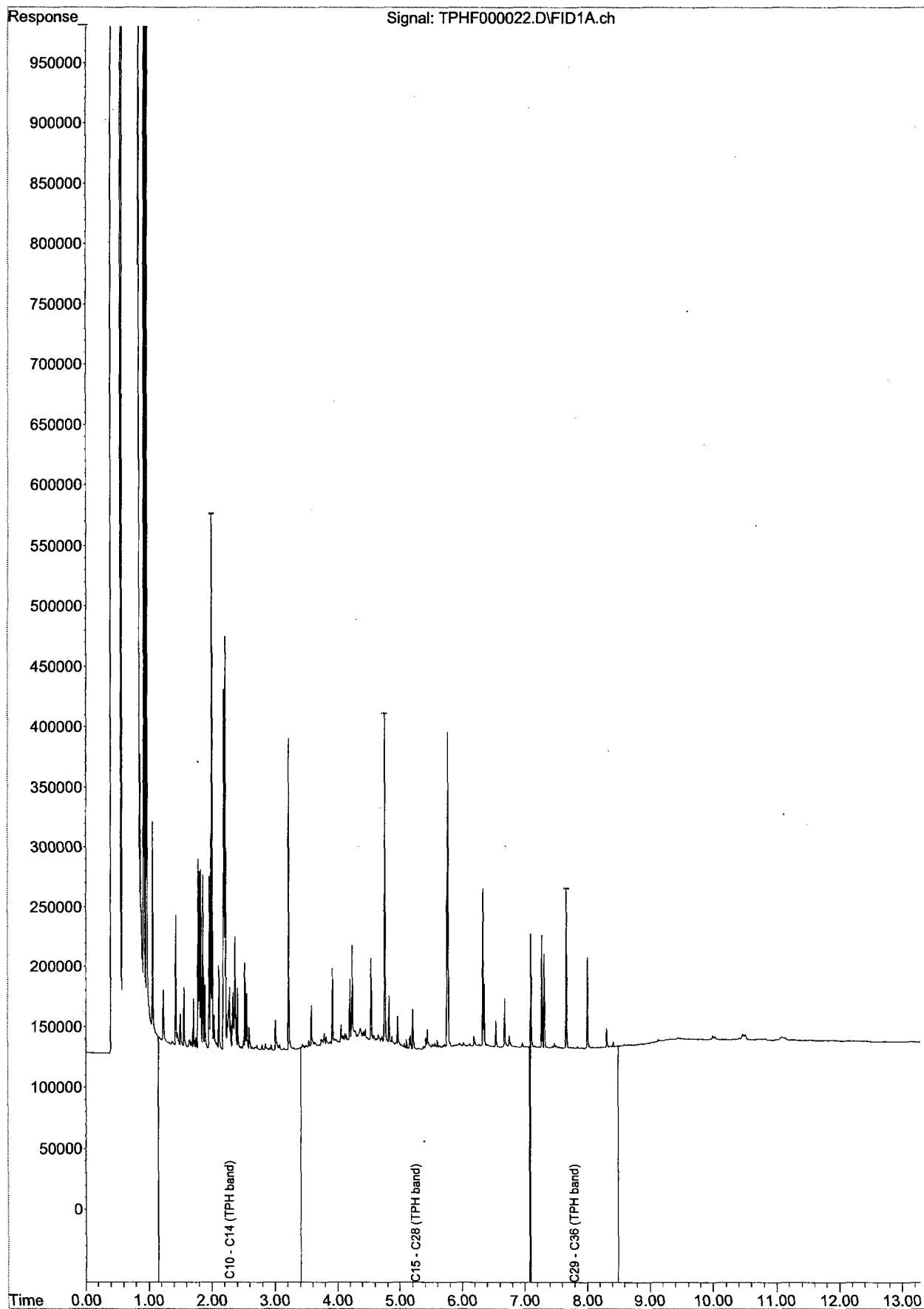
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Laboratory Number: ES0907497-007  
Sample ID : MW07\_21/05/09  
Date Acquired : 27-May-2009, 20:06:44



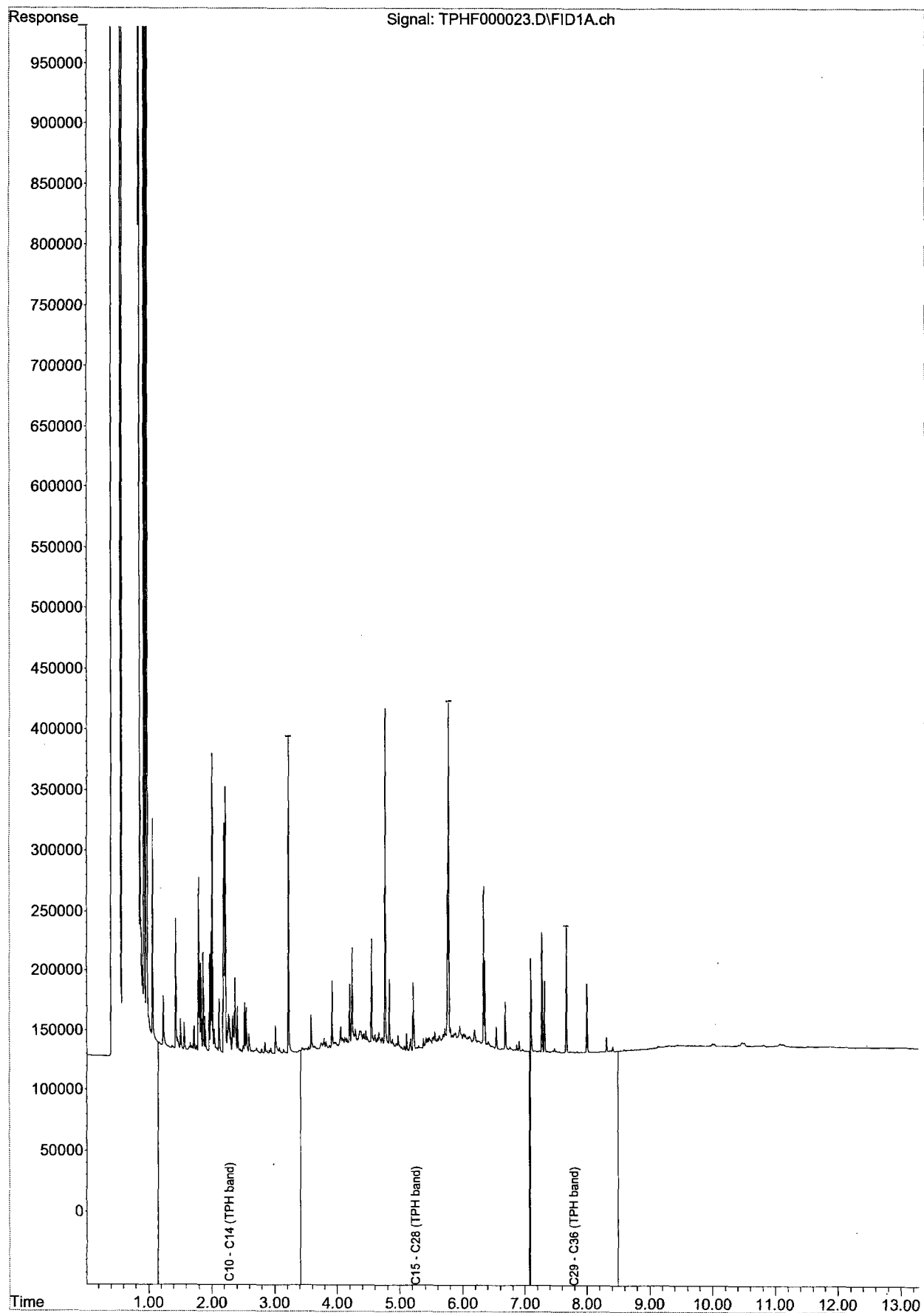
Data File : TPHF000021.D  
Laboratory Number: ES0907497-008  
Sample ID : QC100\_21/05/09  
Date Acquired : 27-May-2009, 20:25:51



Data File : TPHF000022.D  
Laboratory Number: ES0907497-009  
Sample ID : QCR1\_21/05/09  
Date Acquired : 27-May-2009, 20:44:46



Data File : TPHF000023.D  
Laboratory Number: ES0907497-010  
Sample ID : QCF1\_21/05/09  
Date Acquired : 27-May-2009, 21:03:40





[illegible]

Bottles rec. as listed

4965

# Sample Receipt Advice

**Client Name:** URS Australia Pty Ltd (Mobil)-Sydney  
**Attention:** MR Norm Ronis  
**Client Reference number:** 42424195  
Mobil Merimbula NO 1063

**Date Received:** 26 May 2009  
**Due Date:** 2 June 2009  
**Turnaround:** Standard

---

**Laboratory Reference**

**Number:** 09ENME0016965

**Your Laboratory**

**Contact:**

Kim Jolly

+61 3 9538 2277

If you have any queries regarding turnaround and sample progress, technical queries or wish to make changes please contact the laboratory immediately.

---

## Job Information

### Sample Integrity

Attempt to Chill was evident	Yes
Samples correctly preserved	Yes
Chic samples had Teflon liners	Yes
Samples received with Zero Headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No
Custody Seals Intact (if used)	N/A

---

## Analysis Requested

Analysis Requested	Method Code	Number Of Samples
BTEX & (C6-C9) in Water by P&T	1100	1
Dissolved Mercury in Water by FIMS	3400	1
Dissolved Metals in Water By ICP/MS	3100	1
PAH in Water by GC	2100	1
Individual Phenols in Water by GC	2800	1
TPH (C10 - C36) in Water by GC	2000	1
VHCs in Water by P&T	1300	1

---

## Note

- Turn Around Time starts when samples are received at the Laboratory
  - For samples received after 4pm, Turn Around Time starts the next working day
  - For samples received on the last day of holding time, notification of testing requirements must be given at least 6 hours prior to the sample receipt deadlines; Should the laboratory not receive the information in the required timeframe a suitably qualified results may still be reported.
  - Surcharges may apply for 24, 48 and 72 hour turnaround.
  - Water samples will be discarded after 4 weeks unless notified.
  - Soil samples are chilled for 1 month and will be discarded after 3 months unless notified.
  - Samples submitted for Micro analysis on a Friday may incur a \$150 surcharge and / or be analysed outside holding time (24 Hour Holding Time).
  - The Quoted Due Date does not apply to sub-contracted tests or some in-house tests. Contact your Customer Support Officer for details
- NOTE: Unless advised otherwise - Sample analysis will commence regardless of integrity issues and / or non-conformance and these will be recorded on the final report.
-





This document is issued in accordance with NATA's accreditation requirements.  
Accredited for compliance with ISO/IEC 17025  
Accreditation Number: 1645



## Certificate of Analysis

URS Australia Pty Ltd (Mobil)-Sydney  
Level 3, 116 Miller Street  
NORTH SYDNEY NSW 2060  
Australia

Attention: Norm Ronis

Project 09ENME0016965  
Client Reference 42424195  
Mobil Merimbula NO 1063  
Received Date 26/05/2009 11:15:00 AM

Customer Sample ID	QC200_21/0
Sample Matrix	5/09
Labmark Sample No.	WATER
Date Sampled	1560224
	21/05/2009

### VOC

Test/Reference	PQL	Unit	
<b>1300 VHCs in Water by P&amp;T</b>			
Pentafluorobenzene-Surrogate	1	%	89
Toluene-D8 - Surrogate	1	%	98
4-Bromofluorobenzene - Surrogate	1	%	106
Vinyl chloride	5	µg/L	<5.0
Chloroethane	5	µg/L	<5.0
Trichlorofluoromethane	5	µg/L	<5.0
1,1-Dichloroethene	5	µg/L	<5.0
Methylene Chloride	10	µg/L	<10.0
trans-1,2-Dichloroethene	5	µg/L	<5.0
1,1-Dichloroethane	30	µg/L	<30.0
cis-1,2-Dichloroethene	5	µg/L	<5.0
Bromochloromethane	5	µg/L	<5.0
Chloroform	10	µg/L	<10.0
1,2-Dichloroethane	5	µg/L	<5.0
1,1,1-Trichloroethane	5	µg/L	<5.0
Carbon Tetrachloride	5	µg/L	<5.0
Dibromomethane	5	µg/L	<5.0
1,2-Dichloropropane	5	µg/L	<5.0
Trichloroethene	5	µg/L	<5.0
Bromodichloromethane	5	µg/L	<5.0
cis-1,3-Dichloropropene	5	µg/L	<5.0
trans-1,3-Dichloropropene	5	µg/L	<5.0
1,1,2-Trichloroethane	5	µg/L	<5.0
1,3-Dichloropropane	5	µg/L	<5.0
Dibromochloromethane	5	µg/L	<5.0
Tetrachloroethene	5	µg/L	<5.0
1,1,1,2-Tetrachloroethane	5	µg/L	<5.0
Chlorobenzene	5	µg/L	<5.0
Bromoform	5	µg/L	<5.0
1,1,2,2-Tetrachloroethane	5	µg/L	<5.0
2-Chlorotoluene	5	µg/L	<5.0
4-Chlorotoluene	5	µg/L	<5.0
Pentachloroethane	5	µg/L	<5.0
1,3-Dichlorobenzene	5	µg/L	<5.0

First Reported: 1 June 2009

Date Printed: 1 June 2009

Labmark 1868 Dandenong Rd Clayton VIC Australia 3168  
30 008 127 802 Telephone: (03) 9538 2277 Facsimile: (03) 9538 2278

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Final Report Number : 397821

2800 Individual Phenols in Water by GC			
2,3,4,6-Tetrachlorophenol	10	µg/L	<10
2,3,4-Trichlorophenol	10	µg/L	<10
2,3,5,6-Tetrachlorophenol	10	µg/L	<10
2,3,5-Trichlorophenol	10	µg/L	<10
2,3,6-Trichlorophenol	10	µg/L	<10
2,3-Dichlorophenol	20	µg/L	<20
2,4&2,5-Dichlorophenol	40	µg/L	<40
2,4,6-Trichlorophenol	10	µg/L	<10
2,6-Dichlorophenol	10	µg/L	<10
2-Chlorophenol	10	µg/L	<10

Customer Sample ID QC200\_21/0  
5/09  
Sample Matrix WATER  
Labmark Sample No. 1560224  
Date Sampled 21/05/2009

#### SVOC

Test/Reference	PQL	Unit	
2-Methylphenol	10	µg/L	<10
3,4-Dichlorophenol	20	µg/L	<20
3,5-Dichlorophenol	20	µg/L	<20
3-Chlorophenol & 4-Chlorophenol	10	µg/L	<10
3-Methylphenol & 4-Methylphenol	10	µg/L	<10
4-Chloro-3-methylphenol	10	µg/L	<10
Pentachlorophenol	30	µg/L	<30
Phenol	10	µg/L	<10
2,4,6-Tribromophenol-Surrogate	-	%	73

#### 2000 TPH (C10 - C36) in Water by GC

C10-C14 Fraction	40	µg/L	88
C15-C28 Fraction	100	µg/L	303
C29-C36 Fraction	100	µg/L	<100

#### Metals

Test/Reference	PQL	Unit	
<b>3100 Dissolved Metals in Water By ICP/MS</b>			
Arsenic	5	µg/L	<5
Barium	5	µg/L	15
Cadmium	5	µg/L	<5
Chromium	5	µg/L	<5
Copper	5	µg/L	<5
Lead	5	µg/L	<5
Nickel	5	µg/L	<5
Vanadium	5	µg/L	<5
Zinc	5	µg/L	12

#### 3400 Dissolved Mercury in Water by FIMS

Mercury	0.1	µg/L	<0.1
---------	-----	------	------

#### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Analysed
1100 BTEX & (C6-C9) in Water by P&T	Melbourne 1645	28/05/2009	29/05/2009
1300 VHCs in Water by P&T	Melbourne 1645	27/05/2009	29/05/2009
2000 TPH (C10 - C36) in Water by GC	Melbourne 1645	27/05/2009	28/05/2009
2100 PAH in Water by GC	Melbourne 1645	27/05/2009	29/05/2009
2800 Individual Phenols in Water by GC	Melbourne 1645	27/05/2009	29/05/2009
3100 Dissolved Metals in Water By ICP/MS	Melbourne 1645	26/05/2009	27/05/2009
3400 Dissolved Mercury in Water by FIMS	Melbourne 1645	26/05/2009	27/05/2009

## Labmark Internal Quality Control Review

### 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. Matrix spike recoveries are calculated on an 'As Received' basis; the parent sample result is moisture corrected after the % recovery is determined.
3. Proficiency trial results are available on request.
4. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spike or surrogate recoveries.
6. Test samples duplicated or spiked, are for this job only and are identified in the following QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered sample, unless noted otherwise.
8. When individual results are qualified in the body of a report, refer to the qualifier descriptions that follow.
9. Samples were analysed on an as received basis.
10. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sampling and Preservation Chart for Soils & Waters' for holding times. (LM-FOR-ADM-020)

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 Acknowledgement.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitability 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

### Quality Control Results

Laboratory: **EN\_METALS**

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1559700 [ Method Blank ]							
3400 Dissolved Mercury in Water by FIMS							
Mercury	µg/L	<0.1			< 0.1	Pass	
1560512 [ Method Blank ]							
3100 Dissolved Metals in Water By ICP/MS							
Arsenic	µg/L	<5			< 5	Pass	
Barium	µg/L	<5			< 5	Pass	
Cadmium	µg/L	<5			< 5	Pass	
Chromium	µg/L	<5			< 5	Pass	
Copper	µg/L	<5			< 5	Pass	
Lead	µg/L	<5			< 5	Pass	
Manganese	µg/L	<5			< 5	Pass	
Molybdenum	µg/L	<5			< 5	Pass	
Nickel	µg/L	<5			< 5	Pass	
Vanadium	µg/L	<5			< 5	Pass	
Zinc	µg/L	<5			< 5	Pass	
1559701 [ Laboratory Control Sample ]							
3400 Dissolved Mercury in Water by FIMS							
Mercury	µg/L	9.6	Expected Value	Percent Recovery	80-120 %	Pass	
			10.0	96			

Laboratory: EN\_METALS

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1560513 [ Laboratory Control Sample ]							
3100 Dissolved Metals in Water By ICP/MS			Expected Value	Percent Recovery			
Arsenic	µg/L	96	100.0	96	80-120 %	Pass	
Barium	µg/L	100	100.0	101	80-120 %	Pass	
Cadmium	µg/L	100	100.0	101	80-120 %	Pass	
Chromium	µg/L	100	100.0	100	80-120 %	Pass	
Copper	µg/L	93	100.0	93	80-120 %	Pass	
Lead	µg/L	110	100.0	106	80-120 %	Pass	
Manganese	µg/L	96	100.0	96	80-120 %	Pass	
Molybdenum	µg/L	99	100.0	99	80-120 %	Pass	
Nickel	µg/L	95	100.0	95	80-120 %	Pass	
Vanadium	µg/L	100	100.0	102	80-120 %	Pass	
Zinc	µg/L	94	100.0	94	80-120 %	Pass	

Laboratory: EN\_SVOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1560661 [ Method Blank ]							
2000 TPH (C10 - C36) in Water by GC							
C10-C14 Fraction	µg/L	<40			< 40	Pass	
C15-C28 Fraction	µg/L	<100			< 100	Pass	
C29-C36 Fraction	µg/L	<100			< 100	Pass	



Laboratory: EN\_SVOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
<b>1560663 [ Method Blank ]</b>							
<b>2100 PAH in Water by GC</b>							
Acenaphthene	µg/L	<1			< 1	Pass	
Acenaphthylene	µg/L	<1			< 1	Pass	
Anthracene	µg/L	<1			< 1	Pass	
Benz(a)anthracene	µg/L	<1			< 1	Pass	
Benzo(a)pyrene	µg/L	<1			< 1	Pass	
Benzo(b)&(k)fluoranthene	µg/L	<2			< 2	Pass	
Benzo(ghi)perylene	µg/L	<1			< 1	Pass	
Chrysene	µg/L	<1			< 1	Pass	
Dibenz(ah)anthracene	µg/L	<1			< 1	Pass	
Fluoranthene	µg/L	<1			< 1	Pass	
Fluorene	µg/L	<1			< 1	Pass	
Indeno(123-cd)pyrene	µg/L	<1			< 1	Pass	
Naphthalene	µg/L	<1			< 1	Pass	
Phenanthrene	µg/L	<1			< 1	Pass	
Pyrene	µg/L	<1			< 1	Pass	
Sum of PAHs	µg/L	<1			< 1	Pass	
2-Fluorobiphenyl - Surrogate	%	91			70-130 %	Pass	
Anthracene-D10 - Surrogate	%	90			70-130 %	Pass	
p-Terphenyl-D14 - Surrogate	%	94			70-130 %	Pass	
<b>2800 Individual Phenols in Water by GC</b>							
2,3,4,6-Tetrachlorophenol	µg/L	<10			< 10	Pass	
2,3,4-Trichlorophenol	µg/L	<10			< 10	Pass	
2,3,5,6-Tetrachlorophenol	µg/L	<10			< 10	Pass	
2,3,5-Trichlorophenol	µg/L	<10			< 10	Pass	
2,3,6-Trichlorophenol	µg/L	<10			< 10	Pass	
2,3-Dichlorophenol	µg/L	<20			< 20	Pass	
2,4&2,5-Dichlorophenol	µg/L	<40			< 40	Pass	
2,4,6-Trichlorophenol	µg/L	<10			< 10	Pass	
2,6-Dichlorophenol	µg/L	<10			< 10	Pass	
2-Chlorophenol	µg/L	<10			< 10	Pass	
2-Methylphenol	µg/L	<10			< 10	Pass	
3,4-Dichlorophenol	µg/L	<20			< 20	Pass	
3,5-Dichlorophenol	µg/L	<20			< 20	Pass	
3-Chlorophenol & 4-Chlorophenol	µg/L	<10			< 10	Pass	
3-Methylphenol & 4-Methylphenol	µg/L	<10			< 10	Pass	
4-Chloro-3-methylphenol	µg/L	<10			< 10	Pass	
Pentachlorophenol	µg/L	<30			< 30	Pass	
Phenol	µg/L	<10			< 10	Pass	
2,4,6-Tribromophenol-Surrogate	%	75			50-130 %	Pass	
<b>1560662 [ Laboratory Control Sample ]</b>							
<b>2000 TPH (C10 - C36) in Water by GC</b>							
			Expected Value	Percent Recovery			
C10-C14 Fraction	µg/L	160	200.0	80	70-130 %	Pass	
C15-C28 Fraction	µg/L	185	200.0	92	70-130 %	Pass	
C29-C36 Fraction	µg/L	195	200.0	97	70-130 %	Pass	

Laboratory: EN\_SVOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1560664 [ Laboratory Control Sample ]							
2100 PAH in Water by GC			Expected Value	Percent Recovery			
Acenaphthene	µg/L	3.9	4.0	98	70-130 %	Pass	
Acenaphthylene	µg/L	3.9	4.0	97	70-130 %	Pass	
Anthracene	µg/L	3.7	4.0	93	70-130 %	Pass	
Benz(a)anthracene	µg/L	3.7	4.0	93	70-130 %	Pass	
Benzo(a)pyrene	µg/L	3.8	4.0	95	70-130 %	Pass	
Benzo(b)&(k)fluoranthene	µg/L	7.3	8.0	92	70-130 %	Pass	
Benzo(ghi)perylene	µg/L	3.4	4.0	85	70-130 %	Pass	
Chrysene	µg/L	3.7	4.0	92	70-130 %	Pass	
Dibenz(ah)anthracene	µg/L	3.5	4.0	88	70-130 %	Pass	
Fluoranthene	µg/L	3.8	4.0	94	70-130 %	Pass	
Fluorene	µg/L	3.8	4.0	95	70-130 %	Pass	
Indeno(123-cd)pyrene	µg/L	3.7	4.0	93	70-130 %	Pass	
Naphthalene	µg/L	3.8	4.0	94	70-130 %	Pass	
Phenanthrene	µg/L	3.8	4.0	95	70-130 %	Pass	
Pyrene	µg/L	3.8	4.0	96	70-130 %	Pass	
Sum of PAHs	µg/L	60	64.0	93	70-130 %	Pass	
2-Fluorobiphenyl - Surrogate	%	89			70-130 %	Pass	
Anthracene-D10 - Surrogate	%	90			70-130 %	Pass	
p-Terphenyl-D14 - Surrogate	%	88			70-130 %	Pass	

Laboratory: EN\_VOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
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Laboratory: EN\_VOC

Sample, Test, Result Reference	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Codes
1561810 [ Method Blank ]						
1300 VOCs in Water by P&T						
1,1,1,2-Tetrachloroethane	µg/L	<5.0		< 5	Pass	
1,1,1-Trichloroethane	µg/L	<5.0		< 5	Pass	
1,1,2,2-Tetrachloroethane	µg/L	<5.0		< 5	Pass	
1,1,2-Trichloroethane	µg/L	<5.0		< 5	Pass	
1,1-Dichloroethane	µg/L	<30.0		< 30	Pass	
1,1-Dichloroethene	µg/L	<5.0		< 5	Pass	
1,1-Dichloropropylene	µg/L	<5.0		< 5	Pass	
1,2,3-Trichlorobenzene	µg/L	<5.0		< 5	Pass	
1,2,3-Trichloropropane	µg/L	<5.0		< 5	Pass	
1,2,4-Trichlorobenzene	µg/L	<5.0		< 5	Pass	
1,2,4-Trimethylbenzene	µg/L	<5.0		< 5	Pass	
1,2-Dibromo-3-chloropropane	µg/L	<5.0		< 5	Pass	
1,2-Dibromoethane	µg/L	<5.0		< 5	Pass	
1,2-Dichlorobenzene	µg/L	<5.0		< 5	Pass	
1,2-Dichloroethane	µg/L	<5.0		< 5	Pass	
1,2-Dichloropropane	µg/L	<5.0		< 5	Pass	
1,3,5-Trimethylbenzene	µg/L	<5.0		< 5	Pass	
1,3-Dichlorobenzene	µg/L	<5.0		< 5	Pass	
1,3-Dichloropropane	µg/L	<5.0		< 5	Pass	
1,4-Dichlorobenzene	µg/L	<5.0		< 5	Pass	
2,2-Dichloropropane	µg/L	<30.0		< 30	Pass	
2-butanone	µg/L	<50.0		< 50	Pass	
2-Chlorotoluene	µg/L	<5.0		< 5	Pass	
4-Chlorotoluene	µg/L	<5.0		< 5	Pass	
4-methyl-2-pentanone	µg/L	<50.0		< 50	Pass	
Benzene	µg/L	<0.5		< 0.5	Pass	
Bromobenzene	µg/L	<5.0		< 5	Pass	
Bromochloromethane	µg/L	<5.0		< 5	Pass	
Bromodichloromethane	µg/L	<5.0		< 5	Pass	
Bromoform	µg/L	<5.0		< 5	Pass	
Bromomethane	µg/L	<5.0		< 5	Pass	
Carbon Tetrachloride	µg/L	<5.0		< 5	Pass	
Chlorobenzene	µg/L	<5.0		< 5	Pass	
Chloroethane	µg/L	<5.0		< 5	Pass	
Chloromethane	µg/L	<5.0		< 5	Pass	
cis-1,2-Dichloroethene	µg/L	<5.0		< 5	Pass	
cis-1,3-Dichloropropene	µg/L	<5.0		< 5	Pass	
Dibromochloromethane	µg/L	<5.0		< 5	Pass	
Dibromomethane	µg/L	<5.0		< 5	Pass	
Dichlorodifluoromethane	µg/L	<5.0		< 5	Pass	
Ethylbenzene	µg/L	<1.0		< 1	Pass	
Hexachlorobutadiene	µg/L	<5.0		< 5	Pass	
Hexachloroethane	µg/L	<5.0		< 5	Pass	
Isopropylbenzene	µg/L	<5.0		< 5	Pass	
Meta- & Para- Xylene	µg/L	<2.0		< 2	Pass	
Methylene Chloride	µg/L	<10.0		< 10	Pass	
Naphthalene	µg/L	<5.0		< 5	Pass	
n-Butylbenzene	µg/L	<5.0		< 5	Pass	
n-Propylbenzene	µg/L	<5.0		< 5	Pass	
Ortho-Xylene	µg/L	<1.0		< 1	Pass	
Pentachloroethane	µg/L	<5.0		< 5	Pass	
p-Isopropyltoluene	µg/L	<5.0		< 5	Pass	
sec-Butylbenzene	µg/L	<5.0		< 5	Pass	
Styrene	µg/L	<5.0		< 5	Pass	
tert-Butylbenzene	µg/L	<5.0		< 5	Pass	
Tetrachloroethene	µg/L	<5.0		< 5	Pass	
Toluene	µg/L	<1.0		< 1	Pass	
Total Xylenes	µg/L	<3.0		< 3	Pass	
trans-1,2-Dichloroethene	µg/L	<5.0		< 5	Pass	

First Reported: 1 June 2009

Date Printed: 1 June 2009

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Final Report Number : 397821

Laboratory: EN\_VOC

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
1561810 [ Method Blank ]							
1300 VOCs in Water by P&T							
trans-1,3-Dichloropropene	µg/L	<5.0			< 5	Pass	
Trichloroethene	µg/L	<5.0			< 5	Pass	
Trichlorofluoromethane	µg/L	<5.0			< 5	Pass	
Vinyl chloride	µg/L	<5.0			< 5	Pass	
1562888 [ Method Blank ]							
1100 MAH(BTEX & C6-C9) in Water P&T							
Benzene	µg/L	<0.5			< 0.5	Pass	
C6-C9 Fraction	µg/L	<20.0			< 20	Pass	
Ethylbenzene	µg/L	<1.0			< 1	Pass	
Meta- & Para- Xylene	µg/L	<2.0			< 2	Pass	
Ortho-Xylene	µg/L	<1.0			< 1	Pass	
Toluene	µg/L	<1.0			< 1	Pass	
Total Xylenes	µg/L	<3.0			< 3	Pass	
4-Bromofluorobenzene - Surrogate	%	80			70-130 %	Pass	
1561812 [ Laboratory Control Sample ]							
1300 VOCs in Water by P&T			Expected Value	Percent Recovery			Q13
1,1,1-Trichloroethane	µg/L	26	25.0	103	70-130 %	Pass	
1,1,2,2-Tetrachloroethane	µg/L	28	25.0	112	70-130 %	Pass	
1,1,2-Trichloroethane	µg/L	28	25.0	111	70-130 %	Pass	
1,1-Dichloroethane	µg/L	<30.0	25.0	96	70-130 %	Pass	
1,1-Dichloroethene	µg/L	17	25.0	69	70-130 %	Fail	
1,2-Dichlorobenzene	µg/L	28	25.0	112	70-130 %	Pass	
1,2-Dichloroethane	µg/L	33	25.0	132	70-130 %	Fail	
1,2-Dichloropropane	µg/L	28	25.0	112	70-130 %	Pass	
1,3-Dichlorobenzene	µg/L	27	25.0	110	70-130 %	Pass	
1,4-Dichlorobenzene	µg/L	28	25.0	111	70-130 %	Pass	
Benzene	µg/L	28	25.0	110	70-130 %	Pass	
Bromodichloromethane	µg/L	25	25.0	99	70-130 %	Pass	
Bromoform	µg/L	17	25.0	66	70-130 %	Fail	
Carbon Tetrachloride	µg/L	22	25.0	88	70-130 %	Pass	
Chlorobenzene	µg/L	26	25.0	104	70-130 %	Pass	
Chloroform	µg/L	32	25.0	127	70-130 %	Pass	
cis-1,3-Dichloropropene	µg/L	24	25.0	95	70-130 %	Pass	
Dibromochloromethane	µg/L	20	25.0	82	70-130 %	Pass	
Ethylbenzene	µg/L	27	25.0	110	70-130 %	Pass	
Methylene Chloride	µg/L	23	25.0	91	70-130 %	Pass	
Tetrachloroethene	µg/L	32	25.0	128	70-130 %	Pass	
Toluene	µg/L	28	25.0	113	70-130 %	Pass	
trans-1,2-Dichloroethene	µg/L	20	25.0	81	70-130 %	Pass	
trans-1,3-Dichloropropene	µg/L	23	25.0	93	70-130 %	Pass	
Trichloroethene	µg/L	26	25.0	104	70-130 %	Pass	
1562890 [ Laboratory Control Sample ]							
1100 MAH(BTEX & C6-C9) in Water P&T			Expected Value	Percent Recovery			
Benzene	µg/L	12	10.0	123	70-130 %	Pass	
C6-C9 Fraction	µg/L	180	140.0	129	70-130 %	Pass	
Ethylbenzene	µg/L	11	10.0	105	70-130 %	Pass	
Meta- & Para- Xylene	µg/L	23	20.0	113	70-130 %	Pass	
Ortho-Xylene	µg/L	11	10.0	106	70-130 %	Pass	
Toluene	µg/L	11	10.0	114	70-130 %	Pass	
Total Xylenes	µg/L	33	30.0	111	70-130 %	Pass	
4-Bromofluorobenzene - Surrogate	%	93			70-130 %	Pass	

**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Samples correctly preserved	Yes
Organic samples had Teflon liners	Yes
Samples received with Zero Headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code Description

- Q10 The Surrogate recovery is outside of the recommended acceptance criteria. Insufficient sample remains to perform re-analysis.
- Q13 Some elements for this test have failed in the QC sample. However when at least 80% have passed the QC can be released. For any failed elements; positive results in blind samples can only be used as a guide. All other QC has passed in this test batch.

**Authorised By**

Alex Petridis	Senior Analyst - SVOC	
Ruth Callander	Client Services Officer	
Mark Herbstreit	Senior Analyst - Metals	Accreditation Number: 1645
Khoa Pham	Analyst - VOC	Accreditation Number: 1645
Olga Alieva	Analyst - SVOC	Accreditation Number: 1645

**Laboratory Manager**

David Elliott Laboratory Manager - Melbourne



**Final Report**

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

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*The samples were not collected by Laboratory staff.*

## Appendix I Laboratory Data Validation

**URS**

## DATA VALIDATION SUMMARY

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

Project Name:	Mobil Merimbula PP2	Project/Task Number:	42424195
Analytical Laboratory:	ALS LabMark	Batch/Ref. Number(s):	ES0907082 09ENME0016330
Date Sampled:	13 - 14/5/09	Sample Type:	Soil
Sample Handling, Receipt and Holding Times	Yes/No	Comments	
COC completed adequately?	No	Extra sample provided and not included on COC.	
All requested analysis conducted?	Yes		
Samples received intact and chilled?	Yes	Sample temperature 1.3°C	
		Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA).	
		Sample ID QC300 and QC400 were not received appropriately preserved bottle for filtered metal analysis.	
		ALS received 2 jars labelled MW5_0.5-0.6	
Samples analysed within appropriate holding times per analytical methods?	Yes		

# of Primary Samples	# of QA/QC Samples	# of Duplicate Samples	# of Triplicate Samples
7 (12 on hold)	3	1	1

<b>Blanks</b>		
Method Blank (MB), Rinsate Blank (RB), Trip Blank (TB), Field Blank (FB)		
Type	Comments	
MB, TB, RB (QC300) and FB (QC400)	All blanks have acceptable results less than the limits of reporting.	
<b>Laboratory Control Samples (LCS)</b>		
Analyte	Comments	
	The LCS recoveries in the ALS batch are within laboratory control limits.	
	The LCS recovery of some VOCs were greater than or less than the laboratory control limits in the LabMark batch.	
<b>Matrix Spike (MS)</b>		
Analyte	Comments	
	Matrix spike recoveries are within laboratory control limits.	
<b>Trip Spike /Control Trip Spike</b>		
Analyte	% R	Comments
n/a		
<b>Duplicates</b>		
Laboratory Duplicates	Comments	
Metals	The RPD for zinc in sample MW7_0.5-0.6 (24.1%) was outside of the LOR based control limits (0-20%).	
	Insufficient laboratory duplicates reported for water PAH/Phenols and TPH due to insufficient samples volume.	
<b>Intra-Laboratory Duplicates</b>		
	Comments	
	The intra-laboratory duplicate RPDs were within the control limits.	
<b>Inter-Laboratory Duplicates</b>		
	Comments	
	The inter-laboratory duplicate RPDs were within the control limits.	
<b>Surrogate Monitoring Compound Analyses</b>		
Analyte	Comments	
VOC	The surrogate recovery of toluene-d8 in sample MW7_1.0-1.2 (121%) and QC100 (119%) exceeded the upper control limit (117%).	
<b>Overall Comments</b>		
<p>The analytical data validation has highlighted a number of failures of QA/QC. These include laboratory duplicate RPD and surrogate recovery exceedance.</p> <p>The zinc laboratory duplicate RPD indicates there is some variability in metals analytical, likely due to sample heterogeneity. The laboratory confirmed the results by re-extraction and reanalyses.</p> <p>The surrogate recovery exceedances are marginally outside of the control limits in MW7_1.0-1.2 and QC100 and are unlikely to affect the analytical results.</p> <p>A sub-sample from the sVOC bottle was filtered and used for metals analysis for QC300 and QC400.</p> <p>The frequency of laboratory duplicate samples for PAH/phenols and TPH C10-C36 was less than required due to insufficient samples volume being provided to the laboratory.</p> <p>The two soil sample jars labelled MW5_0.5-0.6 were distinguished by differences in the colour and material. One of the samples was labelled ALS#23 and placed on hold, while the other was labelled ALS#1 and scheduled for analysis.</p> <p>The LOR for toluene was raised due to ambient background concentrations in the laboratory.</p> <p>The analytical results are considered suitable for reporting.</p>		

Performed By: Tom Onus  
Date: 11-Jun-09

Reviewed By: Amanda Lee  
Date: 15-Jun-09

Duplicate and Triplicate RPD Results  
Mobil Service Station Merimbula (NO1063)

Location	Sample ID	Sample Date	Sample Type	MW5				RPD Duplicate	Pass/Fail Duplicate	RPD Triplicate	Pass/Fail Triplicate
				MW5 0.5-0.6	QC100 13/05/09	QC200	QC200				
				PS	FD	FT	FT				
<b>Analyte</b>											
<b>Units</b>											
<b>LOR</b>											
<b>Total Petroleum Hydrocarbons</b>											
C8 - C9 Fraction	mg/kg	10	<10	<10	<5			-	-	-	-
C10 - C14 Fraction	mg/kg	50	<50	<50	<10			-	-	-	-
C15 - C28 Fraction	mg/kg	100	<100	<100	20			-	-	-	-
C29 - C36 Fraction	mg/kg	100	<100	<100	<20			-	-	-	-
Total TPH C10-C36	mg/kg calc		ND	ND	20			-	-	-	-
<b>BTEX</b>											
Benzene	mg/kg	0.2	<0.2	<0.2	<0.2			-	-	-	-
Toluene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
meta- & para-Xylene	mg/kg	0.5	<0.5	<0.5	<2			-	-	-	-
ortho-Xylene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Total xylene	mg/kg calc		ND	ND	<3			-	-	-	-
<b>Metals</b>											
Lead	mg/kg	5	9	6	8.3			20	Pass	4.0	Pass
<b>Moisture Content</b>											
Moisture Content (dried @ 103°C)	%	1	12.1	12.1	21			0	Pass	26.9	Pass
<b>Polynuclear Aromatic Hydrocarbons</b>											
Naphthalene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Acenaphthene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Fluorene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Phenanthrene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Anthracene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Fluoranthene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Pyrene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Chrysene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Benz(b)fluoranthene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Benz(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Benz(a)pyrene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Benz(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Total PAHs	mg/kg calc		ND	ND	ND			-	-	-	-
<b>Phenolic Compounds</b>											
Phenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
2-Chlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
2-Methylphenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
3- & 4-Methylphenol	mg/kg	1	<1.0	<1.0	<1.0			-	-	-	-
2-Nitrophenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
2,4-Dimethylphenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
2,4-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
2,6-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
4-Chloro-3-Methylphenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5			-	-	-	-
Pentachlorophenol	mg/kg	2	<2.0	<2.0	<1.0			-	-	-	-
<b>Metals</b>											
Arsenic	mg/kg	5	<5	<5	<2			0	Pass	0	Pass
Barium	mg/kg	10	10	10	10			-	-	-	-
Cadmium	mg/kg	1	<1	<1	<2			-	-	-	-
Chromium	mg/kg	2	<2	<2	<2			-	-	-	-
Copper	mg/kg	5	<5	<5	<2			-	-	-	-
Lead	mg/kg	5	9	6	8.3			20	Pass	4.0	Pass
Mercury	mg/kg	0.1	<0.1	<0.1	0.01			-	-	-	-
Nickel	mg/kg	2	<2	<2	<2			-	-	-	-
Vanadium	mg/kg	5	<5	<5	<2			-	-	-	-
Zinc	mg/kg	5	26	19	26			15.6	Pass	2.0	Pass
<b>Fumigants</b>											
2,2-Dichloropropane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2-Dichloropropane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
cis-1,3-Dichloropropylene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
trans-1,3-Dichloropropylene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2-Dibromoethane (EDB)	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
<b>Halogenated Aliphatic Compounds</b>											
Dichlorodifluoromethane	mg/kg	5	<5	<5	<1			-	-	-	-
Chloromethane	mg/kg	5	<5	<5	<1			-	-	-	-
Vinyl chloride	mg/kg	5	<5	<5	<1			-	-	-	-
Bromomethane	mg/kg	5	<5	<5	<1			-	-	-	-
Chloroethane	mg/kg	5	<5	<5	<1			-	-	-	-
Trichlorofluoromethane	mg/kg	5	<5	<5	<1			-	-	-	-
1,1-Dichloroethene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Iodomethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
trans-1,2-Dichloroethene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,1-Dichloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
cis-1,2-Dichloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,1,1-Trichloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,1-Dichloropropylene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Carbon Tetrachloride	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2-Dichloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Trichloroethene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Dibromomethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,1,2-Trichloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,3-Dichloropropane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Tetrachloroethene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,1,1,2-Tetrachloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
trans-1,4-Dichloro-2-butene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
cis-1,4-Dichloro-2-butene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2,3-Trichloropropane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2-Dibromo-3-chloropropane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
<b>Halogenated Aromatic Compounds</b>											
Chlorobenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Bromobenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
2-Chlorotoluene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
4-Chlorotoluene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
1,2,3-Trichlorobenzene	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
<b>Trihalomethanes</b>											
Chloroform	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Bromodichloromethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Dibromochloromethane	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-
Bromoform	mg/kg	0.5	<0.5	<0.5	<1			-	-	-	-

Legend

mg/kg = milligrams per kilogram  
LOR = limit of reporting  
- = not analysed  
ND = not detected  
calc = calculated

ppm = parts per million  
PS = primary sample  
FD = field duplicate  
FT = field triplicate  
- = no RPD calculated as results below the LOR

RPDs are acceptable if:

Pass RPD <= 30%  
Pass-1 RPD > 30%, Analysis result < 10 times LOR  
Pass-2 RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR



## DATA VALIDATION SUMMARY

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

Project Name: Mobil Merimbula PP2 Project/Task Number: 42424195  
 Analytical Laboratory: ALS Batch/Ref. Number(s): ES0907497  
 LabMark 09ENME0016965  
 Date Sampled: 21/05/2009 Sample Type: Liquid

Sample Handling, Receipt and Holding Times	Yes/No	Comments
COC completed adequately	Yes	
All requested analysis conducted	Yes	
Samples received intact and chilled	Yes	Sample temperature 5.8°C
Samples analysed within appropriate holding times per analytical methods.		

# of Primary Samples	# of QA/QC Samples	# of Duplicate Samples	# of Triplicate Samples
7	3	1	1

### Blanks

Method Blank (MB), Rinse Blank (RB), Trip Blank (TB), Field Blank (FB)

Type	Comments
MB, TB (QCTB), RB (QCR1) and FB (QCF1)	TPH C10-C14, TPH C15-C28 and naphthalene were detected in the RB and FB. No detections above the LOR were made in the MB or TB.

### Laboratory Control Samples (LCS)

Analyte	Comments
	The LCS recovery of vinyl chloride (136%) exceeded the upper control limit (129%).
	The LCS recovery of iodomethane (65.7%) was less than the lower control limits (70.2%).
	The LCS recovery of some VOCs in the LabMark batch exceeded the control limits.

### Matrix Spike (MS)

Analyte	Comments
	Matrix spike recoveries are within laboratory control limits.

### Trip Spike /Control Trip Spike

Analyte	% R	Comments
n/a		

### Duplicates

Laboratory Duplicates	Comments
	The laboratory duplicate RPDs were within the control limits.

### Intra-Laboratory Duplicates

Duplicates	Comments
	The intra-laboratory duplicate RPDs were within the control limits.

### Inter-Laboratory Duplicates

Duplicates	Comments
	The inter-laboratory duplicate RPDs were within the control limits.

### Surrogate Monitoring Compound Analyses

Analyte	Comments
VOC and TPH/BTEX	The surrogate recovery of toluene-d8 and 4-bromofluorobenzene exceeded the upper control limit (110% and 117% respectively) in and number of samples.

### Overall Comments

The analytical data validation has highlighted a number of failures of QA/QC. These include FB and RB detections, LCS recovery exceedances and surrogate recovery exceedance.

The LCS recovery exceedances were marginally outside of the control limits and are unlikely to affect the analytical results.

The surrogate recovery exceedances are marginally outside of the control limits and are unlikely to affect the analytical results.

The frequency of laboratory duplicate samples for PAH/phenols was less than required.

The LOR for toluene was raised due to ambient background concentrations in the laboratory.

The LOR for chromium was raised due to matrix interference.

The results for TPH C10-C36 in all samples and BTEX in MW07 were confirmed by re-analyses.

The analytical results are considered suitable for reporting.

Performed By: Tom Onus  
 Date: 11-Jun-09

Reviewed By: Amanda Lee  
 Date: 15-Jun-09

Duplicate and Triplicate RPD Results  
Mobil Service Station Merimbula (NO1063)

Sample ID	MM05	GC100	GC200	RPD	Pass/Fail	RPD
Sample Date	21/05/2009	21/05/2009	21/05/2009	Duplicate	Duplicate	Triplicate
Sample Type	PS	FD	FT			

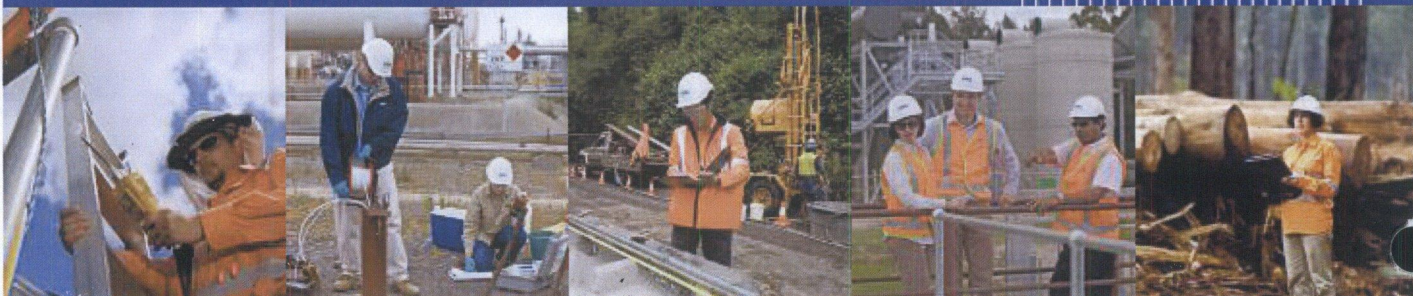
Analyte	Units	LOR				
<b>Total Petroleum Hydrocarbons</b>						
C6 - C9 Fraction	µg/L	20	<20	<20	<20	-
C10 - C14 Fraction	µg/L	50	<50	<50	88	-
C15 - C28 Fraction	µg/L	100	200	200	303	0
C29 - C36 Fraction	µg/L	50	140	130	<100	3.7
Total TPH C10-C36	µg/L	calc	340	330	391	1.5
<b>BTEX</b>						
Benzene	µg/L	1	<1	<1	<0.5	-
Toluene	µg/L	2	<5	<5	<1	-
Ethylbenzene	µg/L	2	<2	<2	<1	-
meta- & para-Xylene	µg/L	2	<2	<2	<2	-
ortho-Xylene	µg/L	2	<2	<2	<1	-
Total xylenes	µg/L	calc	ND	ND	ND	-
<b>Metals</b>						
Lead	mg/L	0.001	<0.001	<0.001	<0.005	-
<b>Polynuclear Aromatic Hydrocarbons</b>						
Naphthalene	µg/L	1	2.6	1.8	<1.0	-
Acenaphthylene	µg/L	1	<1.0	<1.0	<1.0	-
Acenaphthene	µg/L	1	<1.0	<1.0	<1.0	-
Fluorene	µg/L	1	<1.0	<1.0	<1.0	-
Phenanthrene	µg/L	1	<1.0	<1.0	<1.0	-
Anthracene	µg/L	1	<1.0	<1.0	<1.0	-
Fluoranthene	µg/L	1	<1.0	<1.0	<1.0	-
Pyrene	µg/L	1	<1.0	<1.0	<1.0	-
Benz(a)anthracene	µg/L	1	<1.0	<1.0	<1.0	-
Chrysene	µg/L	1	<1.0	<1.0	<1.0	-
Benzo(b)fluoranthene	µg/L	1	<1.0	<1.0	<1.0	-
Benzo(k)fluoranthene	µg/L	1	<1.0	<1.0	<2.0	-
Benzo(a)pyrene	µg/L	0.5	<0.5	<0.5	<1.0	-
Indeno(1,2,3-cd)pyrene	µg/L	1	<1.0	<1.0	<1.0	-
Dibenz(a,h)anthracene	µg/L	1	<1.0	<1.0	<1.0	-
Benzo(g,h,i)perylene	µg/L	1	<1.0	<1.0	<1.0	-
Total PAHs	µg/L	calc	2.6	1.8	ND	18.2
<b>Phenolic Compounds</b>						
Phenol	µg/L	1	<1.0	<1.0	<1.0	-
2-Chlorophenol	µg/L	1	<1.0	<1.0	<1.0	-
2-Methylphenol	µg/L	1	<1.0	<1.0	<1.0	-
3- & 4-Methylphenol	µg/L	2	<2.0	<2.0	<1.0	-
2-Nitrophenol	µg/L	1	<1.0	<1.0	—	-
2,4-Dimethylphenol	µg/L	1	<1.0	<1.0	—	-
2,4-Dichlorophenol	µg/L	1	<1.0	<1.0	—	-
2,6-Dichlorophenol	µg/L	1	<1.0	<1.0	<1.0	-
4-Chloro-3-Methylphenol	µg/L	1	<1.0	<1.0	<1.0	-
2,4,6-Trichlorophenol	µg/L	1	<1.0	<1.0	<1.0	-
2,4,5-Trichlorophenol	µg/L	1	<1.0	<1.0	—	-
Pentachlorophenol	µg/L	2	<2.0	<2.0	<30	-
<b>Metals</b>						
Arsenic	mg/L	0.001	0.003	0.003	<0.005	0.0
Barium	mg/L	0.001	0.015	0.014	0.015	3.4
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.005	-
Chromium	mg/L	0.001	0.002	0.002	<0.005	0.0
Copper	mg/L	0.001	<0.001	<0.001	<0.005	-
Lead	mg/L	0.001	<0.001	<0.001	<0.005	-
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	-
Nickel	mg/L	0.001	<0.001	<0.001	<0.005	-
Vanadium	mg/L	0.01	<0.01	<0.01	<0.005	-
Zinc	mg/L	0.005	0.012	0.015	0.012	11.1
<b>Fumigants</b>						
2,2-Dichloropropane	µg/L	5	<5	<5	—	-
1,2-Dichloropropane	µg/L	5	<5	<5	<5	-
cis-1,3-Dichloropropylene	µg/L	5	<5	<5	<5	-
trans-1,3-Dichloropropylene	µg/L	5	<5	<5	<5	-
<b>Halogenated Aliphatic Compounds</b>						
Dichlorodifluoromethane	µg/L	50	<50	<50	—	-
Chloromethane	µg/L	50	<50	<50	—	-
Vinyl chloride	µg/L	50	<50	<50	<5	-
Bromomethane	µg/L	50	<50	<50	—	-
Chloroethane	µg/L	50	<50	<50	<5	-
Trichlorofluoromethane	µg/L	50	<50	<50	<5	-
1,1-Dichloroethane	µg/L	5	<5	<5	<5	-
Iodomethane	µg/L	5	<5	<5	—	-
trans-1,2-Dichloroethane	µg/L	5	<5	<5	<5	-
1,1-Dichloroethane	µg/L	5	<5	<5	<5	-
cis-1,2-Dichloroethane	µg/L	5	<5	<5	<5	-
1,1,1-Trichloroethane	µg/L	5	<5	<5	<5	-
1,1-Dichloropropylene	µg/L	5	<5	<5	—	-
Carbon Tetrachloride	µg/L	5	<5	<5	<5	-
1,2-Dichloroethane	µg/L	5	<5	<5	<5	-
Trichloroethane	µg/L	5	<5	<5	<5	-
Dibromomethane	µg/L	5	<5	<5	<5	-
1,1,2-Trichloroethane	µg/L	5	<5	<5	<5	-
1,3-Dichloropropane	µg/L	5	<5	<5	<5	-
Tetrachloroethane	µg/L	5	<5	<5	<5	-
1,1,1,2-Tetrachloroethane	µg/L	5	<5	<5	—	-
trans-1,4-Dichloro-2-butene	µg/L	5	<5	<5	—	-
cis-1,4-Dichloro-2-butene	µg/L	5	<5	<5	—	-
1,1,2,2-Tetrachloroethane	µg/L	5	<5	<5	<5	-
1,2,3-Trichloropropane	µg/L	5	<5	<5	—	-
Pentachloroethane	µg/L	5	<5	<5	<5	-
1,2-Dibromo-3-chloropropane	µg/L	5	<5	<5	—	-
Hexachlorobutadiene	µg/L	5	<5	<5	<5	-
<b>Halogenated Aromatic Compounds</b>						
Chlorobenzene	µg/L	5	<5	<5	<5	-
Bromobenzene	µg/L	5	<5	<5	—	-
2-Chlorotoluene	µg/L	5	<5	<5	<5	-
4-Chlorotoluene	µg/L	5	<5	<5	<5	-
1,3-Dichlorobenzene	µg/L	5	<5	<5	<5	-
1,4-Dichlorobenzene	µg/L	5	<5	<5	<5	-
1,2-Dichlorobenzene	µg/L	5	<5	<5	<5	-
1,2,4-Trichlorobenzene	µg/L	5	<5	<5	<5	-
1,2,3-Trichlorobenzene	µg/L	5	<5	<5	<5	-
<b>Trihalomethanes</b>						
Chloroform	µg/L	5	<5	<5	<10	-
Bromodichloromethane	µg/L	5	<5	<5	<5	-
Dibromochloromethane	µg/L	5	<5	<5	<5	-
Bromoform	µg/L	5	<5	<5	<5	-

Legend  
mg/L = milligrams per litre  
µg/L = micrograms per litre  
LOR = Limit of Reporting  
calc = calculated concentration therefore no ND = Not Detected  
- = no RPD calculated as results below the LOR

PS = primary sample  
FD = field duplicate  
FT = field triplicate

RPDs are acceptable if:  
Pass RPD ≤ 30%  
Pass-1 RPD > 30%, Analysis result < 10 times LOR  
Pass-2 RPD ≤ 50%, Analysis result > 10 times LOR and < 20 times LOR





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