LEGEND

- Site Boundary
- Approximate UST location
- Abandoned/Former/Historic UST
- Bowser
- Fill Point
- Oil /Water Separator
- Vents
- Groundwater Monitoring Well
- Inferred Groundwater Contour (m RL)
- Inferred Groundwater Flow Direction
- < LOR
- < ILs
- > GILs
- > HSL D

TANK ID	CAPACITY (L)	PRODUCT
DEPOT 1	45,200	V95
DEPOT 2	45,200	ULP
DEPOT 3	45,200	ULP
DEPOT 4	45,200	ULP
DEPOT 5	27,400	V98
DEPOT 6	25,000	DIESEL
DEPOT 7	7,500	LPG AST

0 5 10 15 20 m

Scale: 1:450

Coordinate System: GDA 1994 MGA Zone 55

CALTEX AUSTRALIA PETROLEUM PTY LTD

CALTEX CALWELL SERVICE STATION (22176)
1 WEBBER CRESCENT, CALWELL, ACT

GROUNDWATER DATA

URS

GROUNDWATER MONITORING REPORT

File No: 43218532-003-Calwell.mxd Drawn: SCS Approved: EG Date: OCTOBER 2015

Figure: 3 Rev: 0 A3

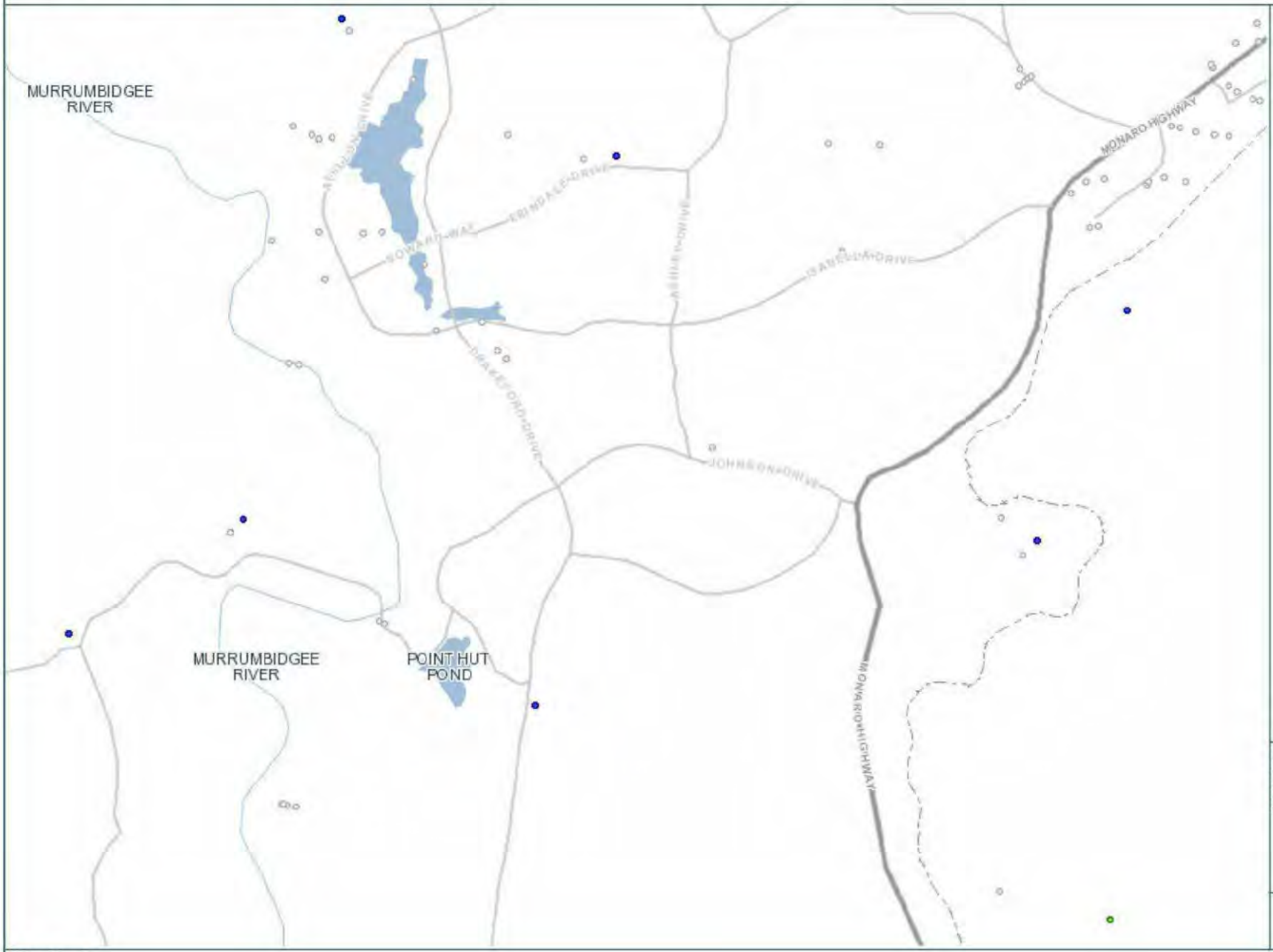
URS

APPENDIX A REGISTERED GROUNDWATER BORES - BUREAU OF METEOROLOGY

Australian Government
Bureau of Meteorology

Australian Groundwater Explorer

Groundwater Bores



Bores by purpose

- Water Supply
- Monitoring
- Irrigation
- Stock and Domestic
- Commercial and Industrial
- Dewatering
- Exploration
- Unknown
- Other

N

1:56,492

Kilometres 1 2

Data Source: Bureau of Meteorology, Geoscience Australia and State/Territory lead water agencies. Refer to metadata for further information: Click here

Australian Albers GDA94

Date: 8 October, 2015

URS

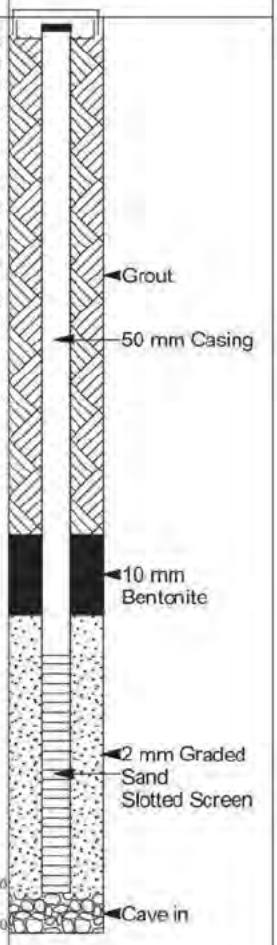
APPENDIX B MONITORING WELL BOREHOLE LOGS

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney NSW 2000

MONITORING WELL LOG BH01 / MW01

PROJECT NUMBER	60196918-006	**DATE**	10 Mar 11
PROJECT NAME	Caltex Calwell (22176)	**BLANK**	50 mm uPVC
LOCATION	Cnr Were St & Webber Crs, Calwell, ACT	**SCREEN**	50 mm Factory Slotted uPVC
DRILLING METHOD	Hand Auger/Push Tube/Solid Flight Auger	**GRAVEL PACK**	2 mm Graded Sand
SAMPLING METHOD	Grab/Push Tube	**SANITARY SEAL/BENTONITE**	10 mm Bentonite
SURFACE ELEVATION	99.938 m AHD	**STABILISED WATER LEVEL**	3.233 m BTOC
WELL HEAD/TOC	99.938 m AHD	**GROUND WATER ELEVATION**	96.705 m AHD
LOGGED BY	H. Cross		
COMMENTS			

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
				0.2	CONCRETE	CONCRETE.	0.17
1.0		BH01_0.5-0.6		0.4	FILL	Sandy Clay (FILL). Dark grey/red, moist (from concrete coring), medium stiff, low plasticity. No odour or staining noted.	0.40
1.4		BH01_0.9-1.0		0.6	FILL		0.70
				0.8	FILL		1.00
				1.0	SC		
				1.2		Sand (FILL). Brown, slightly moist, loose. Sub rounded concrete pieces to 3 cm. Slight hydrocarbon odour noted, no staining observed.	
0.7		BH01_1.9-2.0	✳	1.4			
				1.6			
				1.8			
				2.0			
				2.2			
				2.4		Becomes reddish brown. Medium to coarse grained sand and sub rounded volcanic inclusions to 2 cm. No odour or staining noted.	2.50
				2.6	SC		2.80
0.9		BH01_2.9-3.0		2.8	SC		
				3.0			3.20
				3.2	SC	Clayey Sand. Mottled orange/grey, dry, very dense. Medium grained sand. No odour or staining noted.	
				3.4			3.70
				3.6			
				3.8	BEDROCK		
0.6		BH01_3.9-4.0		4.0		Red/white gravel inclusions. No odour or staining noted.	
				4.2			
				4.4			
				4.6			
				4.8			
0.5		BH01_4.9-5.0	✳	5.0		Increasing clay content.	
				5.2			
				5.4			
				5.6		As above. Black biotite gravels. No odour or staining noted.	
				5.8			
9.9		BH01_5.9-6.0		6.0			
				6.2			
				6.4			
				6.6		Becomes grey/orange, dense. Rounded quartz gravels to 3 cm diameter. No odour or staining noted.	
				6.8			
5.4		BH01_6.9-7.0		7.0		Standing water level measured on 30/3/2011 at 3.233 m below top of casing.	
				7.2			
				7.4			
				7.6			
				7.8		Volcanic bedrock. Brown/grey, slightly moist. No odour or staining noted.	
3.0		BH01_7.9-8.0		8.0			
				8.2			
				8.4			
				8.6			
				8.8			
0.8		BH01_8.9-9.0		9.0			
				9.2			
				9.4			
				9.6			
				9.8			
0.5		BH01_9.9-10.0	✳	10.0			
				10.2			
				10.4			
				10.6			
				10.8			
				11.0	BEDROCK	Becomes saturated. No odour or staining noted.	11.00
						Borehole terminated at 11.5 m bgs in volcanic material. Collapsed back to 11 m bgs. Total Depth: 11.00 m	11.50



WELL DIAGRAM

60196918_CALTEX CALWELL DRAFT_23MAY11.GPJ 26/6/11

AECOM

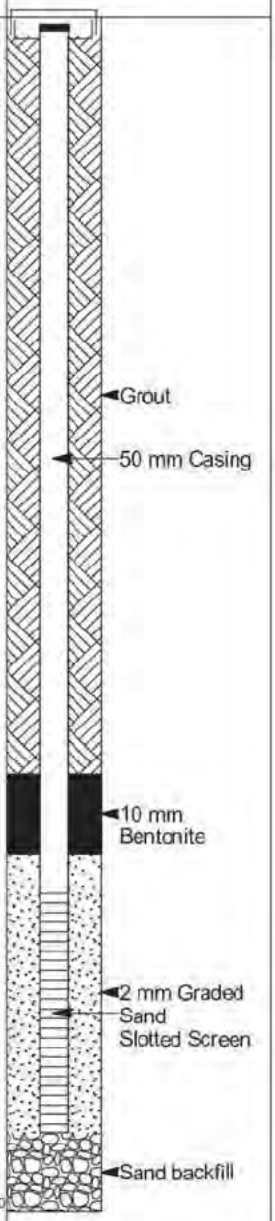
AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney NSW 2000

MONITORING WELL LOG BH02 / MW02

PROJECT NUMBER	60196918-006	**DATE**	10 Mar 11
PROJECT NAME	Caltex Calwell (22176)	**BLANK**	50 mm uPVC
LOCATION	Cnr Were St & Webber Crs, Calwell, ACT	**SCREEN**	50 mm Factory Slotted uPVC
DRILLING METHOD	Hand Auger/Push Tube/Solid Flight Auger	**GRAVEL PACK**	2 mm Graded Sand
SAMPLING METHOD	Grab/Push Tube	**SANITARY SEAL/BENTONITE**	10 mm Bentonite
SURFACE ELEVATION	99.846 m AHD	**STABILISED WATER LEVEL**	4.735 m BTOC
WELL HEAD/TOC	99.846 m AHD	**GROUND WATER ELEVATION**	95.111 m AHD
LOGGED BY	H. Cross		
COMMENTS			

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
1.3		BH02_0.19-0.29		0.2	CONCRETE	CONCRETE.	0.19
1.3		BH02_0.5-0.6		0.4 – 0.6	FILL	Sandy CLAY (FILL). Dark brown/orange, moist (from concrete coring), soft, low plasticity. Minor angular gravels to 2 cm diameter. No odour or staining noted.	0.50
30.9		BH02_0.9-1.0	*	0.8 – 1.2	FILL		0.90 1.00 1.10
75.1		BH02_1.5-1.6		1.4 – 2.0	SW-SC	Becomes slightly moist, soft, medium plasticity. Angular gravels to 3 cm diameter. No odour or staining noted.	2.10
730.4		BH02_2.4-2.5		2.2 – 2.6	SW-SC	Becomes dark grey, low plasticity. Angular gravels to 2 cm diameter and black wood pieces. Chemical odour noted, no staining noted.	2.70
		QC3					
		QC4					
1963		BH02_3.1-3.2		2.8 – 3.2	SC		
2157		BH02_3.4-3.5		3.4 – 3.6	SC	Gravelley CLAY (FILL). Dark grey, slightly moist, hard, low plasticity. Hydrocarbon odour noted, no staining observed.	3.40
6066		BH02_3.9-4.0	*	3.8 – 4.0			
		QC5	*	4.2			
		QC6	*	4.4 – 4.6		Sandy CLAY (SW-SC). Brown/orange mottles, slightly moist, hard, low plasticity. Medium to coarse grained sand and charcoal pieces. Hydrocarbon odour noted, no staining observed.	4.90
				4.8 – 5.0	BEDROCK		
				5.2 – 5.4		Becomes orange. Quartz and biotite gravels. Hydrocarbon odour noted, no staining observed.	
56.5		BH02_5.9-6.0		5.6 – 6.2			
				6.4 – 6.6		Clayey SAND (SC). Brown/grey, slightly moist, medium dense. Medium to coarse grained sand. Hydrocarbon odour noted, no staining observed.	
23.1		BH02_6.9-7.0		6.8 – 7.0	BEDROCK		
				7.2 – 7.6		Clayey SAND with volcanic inclusions. Grey/brown/red, slightly moist, medium dense. Hydrocarbon odour noted, no staining observed.	
34.2		BH02_7.9-8.0		7.8 – 8.4		Standing water level on 30/3/2011 measured at 4.735 m below top of casing.	
				8.6 – 8.8			
16.6		BH02_8.9-9.0		9.0	BEDROCK	Volcanic bedrock. Brown/grey, dry. Hydrocarbon odour noted, no staining observed.	
				9.2 – 9.4		Slight hydrocarbon odour noted, no staining observed.	
61.3		BH02_9.9-10.0	*	9.6 – 10.0		As above. No odour or staining noted.	
8.3		BH02_10.9-11.0		10.2 – 11.0			
				11.2 – 12.4			
				12.6 – 12.8			
2.5		BH02_12.9-13.0		13.0	BEDROCK	Becomes moist. No odour or staining noted.	
1.9		BH02_13.9-14.0		13.2 – 14.6		Becomes saturated. No odour or staining noted.	
0.4		BH02_14.9-15.0	*	14.8 – 15.0		Borehole terminated at 15 m bgs in volcanic material. Backfilled to 14 m bgs to install well in saturated zone. Total Depth: 15.00 m	15.00

WELL DIAGRAM



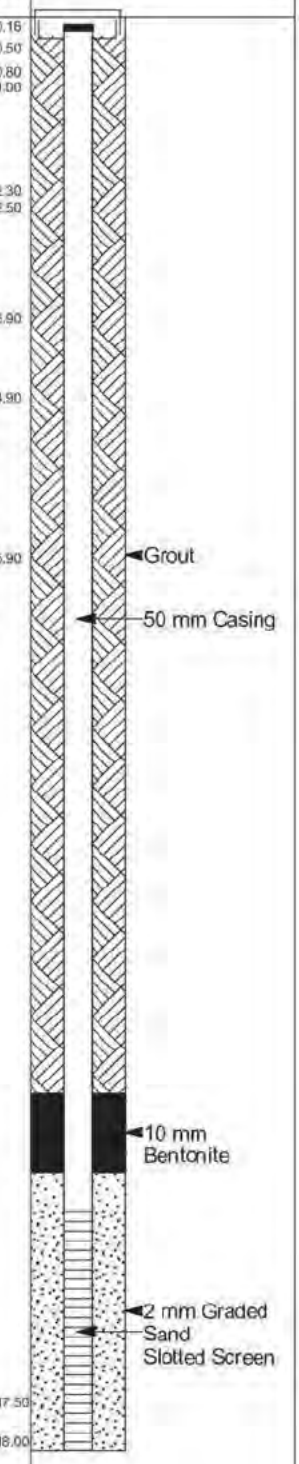
AECOM

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney NSW 2000

MONITORING WELL LOG BH03 / MW03

PROJECT NUMBER	60196918-006	**DATE**	11 Mar 11
PROJECT NAME	Caltex Calwell (22176)	**BLANK**	50 mm uPVC
LOCATION	Cnr Were St & Webber Crs, Calwell, ACT	**SCREEN**	50 mm Factory Slotted uPVC
DRILLING METHOD	Hand Auger/Push Tube/Solid Flight Auger	**GRAVEL PACK**	2 mm Graded Sand
SAMPLING METHOD	Grab/Push Tube	**SANITARY SEAL/BENTONITE**	10 mm Bentonite
SURFACE ELEVATION	99.778 m AHD	**STABILISED WATER LEVEL**	4.417 m BTOC
WELL HEAD/TOC	99.778 m AHD	**GROUND WATER ELEVATION**	95.361 m AHD
LOGGED BY	H. Cross		
COMMENTS			

PID (ppm)	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGS)	GRAPHIC LOG	USCS CLASS	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
1.0		BH03_0.16-0.26		0.2		CONCRETE	CONCRETE.	0.16
1.7		BH03_0.5-0.6		0.4		FILL	Gravelly Sandy Clay (FILL). Brown, moist (from concrete coring), stiff, low plasticity. Concrete pieces to 5 cm diameter. No odour or staining noted.	0.50
1.5		BH03_0.9-1.0	*	0.6		FILL		0.80
				0.8				1.00
				1.0		SW		
				1.2		SC		
				1.4				
				1.6			Becomes grey, soft. Gravels to 1 cm diameter. No odour or staining noted.	
0.4		BH03_1.9-2.0		1.8				
				2.0				
				2.2				2.30
				2.4		BEDROCK	SAND (SW). Brown, slightly moist, loose. Medium to coarse grained sand. No odour or staining noted.	2.50
				2.6		BEDROCK		
1.0		BH03_2.9-3.0		2.8				
				3.0				
				3.2				
				3.4			Clayey SAND (SC). Grey with orange mottles, slightly moist, medium dense. Medium grained sand. No odour or staining noted.	
				3.6				
6.9		BH03_3.9-4.0		3.8				3.90
				4.0		BEDROCK		
				4.2				
				4.4			Increasing sand content and hardness.	
				4.6				
				4.8				4.90
143.5		BH03_4.9-5.0	*	5.0		BEDROCK	Volcanic bedrock. Grey/brown, hard. No odour or staining noted.	
				5.2				
				5.4			Volcanic bedrock. Grey/green, dry, hard. Rootlets and and black charcoal pieces. No odour or staining noted.	
				5.6				
37.9		BH03_5.9-6.0		5.8				
				6.0				
				6.2				
				6.4			Becomes brown/grey, dry, hard. No odour or staining noted.	
				6.6				
				6.8				6.90
139.9		BH03_6.9-7.0		7.0		BEDROCK	Standing water level on 30/3/2011 measured to 4.417 m below top of casing.	
				7.2				
				7.4				
				7.6				
				7.8			Hydrocarbon odour noted, no staining observed.	
21.9		BH03_7.9-8.0		8.0			Hydrocarbon odour noted, no staining observed.	
				8.2				
				8.4				
				8.6				
				8.8				
				9.0				
				9.2				
				9.4				
				9.6				
				9.8				
16.5		BH03_9.9-10.0		10.0				
				10.2				
				10.4				
				10.6				
				10.8				
2.0		BH03_10.9-11.0		11.0				
				11.2				
				11.4				
				11.6				
				11.8				
2.3		BH03_11.9-12.0		12.0				
				12.2				
				12.4				
				12.6				
				12.8				
				13.0				
				13.2				
				13.4				
				13.6				
				13.8				
16.3		BH03_13.9-14.0		14.0				
				14.2				
				14.4				
				14.6				
				14.8				
				15.0				
				15.2				
				15.4				
				15.6				
				15.8				
4.0		BH03_15.9-16.0		16.0				
				16.2				
				16.4				
				16.6				
				16.8				
2.6		BH03_16.9-17.0	*	17.0				
				17.2				
				17.4				
				17.6		BEDROCK	Becomes saturated. No odour or staining noted.	17.50
				17.8				18.00
				18.0			Borehole terminated at 18 m bgs in volcanic bedrock due to achieving target depth. Total Depth: 18.00 m	



60196918_CALTEX CALWELL DRAFT_23MAY11.GPJ 26/8/11

APPENDIX C DATA VALIDATION

DATA VALIDATION REPORT		
Project number: 43218537	**Validation by: Hamish Watkins**	**Date: 08/10/2015**
Client: Caltex		
Site: Caltex Calwell		
Matrix type: Water	**Data verified by: Tanya Stanton**	**Date: 9/10/15**
Primary samples: 3 (MW01_150931, MW02_150831, MW03_150831		
Laboratory: ALS (Primary)/Eurofins (Secondary)		
Lab reference: ES1530349 (ALS)/ 471578 (Eurofins)	**Project Manager: Stephen Randall**	

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication to decision-making on the project.
Field Quality Assurance and Quality Control	
Sampling personnel	All sampling was conducted by Daniel Der Tateossian and Anna Andrzejwski
Sampling Methodology	Samples were collected using Low Flow technique with a peristaltic pump.
Chain of Custody (COC)	Chain of custody documents completed DDT and AA.
Analysis Request	Laboratory analysis request and sample receipt notification reviewed and approved by Stephen Randall.
Field Blank	Field blank samples were not collected for this sampling event.
Rinsate Blank *(QC300_150831)*	Rinsate blank samples were collected at a frequency of one per day of sampling. Concentrations reported below the LOR for all analytes tested. QC300 sample name was collected from a clean unused pair of nitrile gloves.
Trip Blank *TB_22176*	Trip blanks were included at frequency of one per cooler (one in total). Concentrations were not detected above the LOR for all analytes tested.
Frequency of field QC	Field duplicate and triplicates (inter-laboratory duplicates) were collected at a frequency of one in twenty primary samples (five of each in total).
Handling and preservation	Primary, duplicate and triplicate groundwater samples were received preserved and chilled at the laboratory. Sample receipt temperature (1.8°C) was within the recommended range (≤6°C) in primary batch ES1530349. The triplicate sample was received at the secondary laboratory at an elevated temperature (3.4°C). As samples were received at the laboratory on the same day as sampling, it is likely that they had not yet cooled from their ambient sampling temperature and interpretation will not be affected. All samples were received at the laboratory in appropriate sample containers.
Laboratory QA/QC	
Tests requested/reported	Samples were analysed and reported as requested on the Chain Of Custody (COC).
Holding time compliance	Samples were extracted and analysed within recommended holding times with the following exceptions: Extraction from amber glass bottle for TPH and PAH analytes was exceeded by one day.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Sydney) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate sample was analysed at Eurofins MGT (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	The laboratory reported a sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision.
Method Blank	Method blank concentrations were not detected above the LOR for all analytes

DATA VALIDATION REPORT		
Project number: 43218537	**Validation by: Hamish Watkins**	**Date: 08/10/2015**
Client: Caltex		
Site: Caltex Calwell		
Matrix type: Water	**Data verified by: Tanya Stanton**	**Date: 9/10/15**
Primary samples: 3 (MW01_150931, MW02_150831, MW03_150831		
Laboratory: ALS (Primary)/Eurofins (Secondary)		
Lab reference: ES1530349 (ALS)/ 471578 (Eurofins)	**Project Manager: Stephen Randall**	

Laboratory duplicate RPDs	**ALS -** Laboratory duplicate (LD) were conducted on AECOM (for PAH, TPH, BTEXN) samples. LD Relative Percentage Differences (RPD) were within control limits. The laboratory duplicate RPDs are presented in the laboratory Quality Control Report. **Eurofins -** LD were conducted on AECOM (anonymous for TRH, BTEX analytes) samples. LD Relative Percentage Differences (RPD) were within control limits. The laboratory duplicate RPDs are presented in the laboratory Quality Control Report.
Laboratory control spike recovery	LCS recoveries were within control limits.
Matrix spike recovery	**ALS -** MS were conducted on AECOM (for PAHs, TRH, BTEXN analytes) samples. All MS recoveries (where reported) were within control limits. **Eurofins -** MS were conducted on anonymous (for TRH, BTEXN analytes) samples. All MS recoveries (where reported) were within control limits.
Surrogate spike recovery	Surrogate spike recoveries were within control limits.
QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted guideline criteria.
Field duplicate RPDs *MW02_150831/QC100_150831*	Field duplicate RPDs were reported within control limits
Field triplicate RPDs *MW02_150831/QC200_150831*	Field triplicate RPDs were reported within control limits with the exception of the following: C6-C9 Fraction (59.43%), C6-C10 Fraction (59.25%), C6-C10 minus BTEX (F1) (171.43%,), Toulene (55.07%), ortho-xylene (66.67%) and Sum of PAHs (76.58%). These are believed to be due to different laboratory methods used at the primary and triplicate laboratory.
Chromatograms	
Received from ALS	Yes
Other	

As stated by ALS: Particular samples (22176_MW02_150831 and 22176_QC100_150831) required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.

				Location:	MW02	MW02	MW02				
				Sample ID:	22176_MW02_150831	22176_QC100_150831	22176_QC200_150831				
				Date Sampled:	31/08/2015	31/08/2015	31/08/2015				
				Sample Type:	**Primary**	**Secondary**	**Tertiary**				
Analyte	**LOR1**	**LOR2**	**LOR3**	**Units**				**Primary vs. Duplicate RPDs**	**Primary vs. Triplicate RPDs**	**Primary vs. Duplicate Assessment**	**Primary vs. Triplicate Assessment**
TPH											
C6-C9 Fraction	20	20	20	ug/l	9220	8620	17000	6.73%	**59.34%**	Pass	**Fail**
C10 - C14 Fraction	50	50	50	ug/l	650	540	720	18.49%	10.22%	Pass	Pass
C15 - C28 Fraction	100	100	100	ug/l	<100	<100	100	0.00%	66.67%	Pass	Pass-1
C29 - C36 Fraction	50	50	100	ug/l	<50	<50	<100	0.00%	66.67%	Pass	Pass-1
C10 - C36 Fraction	50	50	100	ug/l	650	540	820	18.49%	23.13%	Pass	Pass
TRH Nepm 2013 Fractions											
C6-C10 Fraction	20	20	20	ug/l	9230	8640	17000	6.60%	**59.25%**	Pass	**Fail**
C6-C10 Fraction minus BTEX (F1)	20	20	20	ug/l	< 1000	< 1000	6500	0.00%	**171.43%**	Pass	**Fail**
>C10-C16 Fraction	100	100	50	ug/l	390	330	390	16.67%	0.00%	Pass	Pass
>C10-C16 Fraction minus Naphthalene (F2)	100	100	50	ug/l	320	250	390	24.56%	19.72%	Pass	Pass
>C16-C34 Fraction	100	100	100	ug/l	< 100	< 100	100	0.00%	66.67%	Pass	Pass-1
>C34-C40 Fraction	100	100	100	ug/l	< 100	< 100	< 100	0.00%	0.00%	Pass	Pass
>C10-C40 Fraction (sum)	100	100	-	ug/l	390	330	490	16.67%	22.73%	Pass	Pass
BTEX											
Benzene	1	1	1	ug/l	7810	7620	9700	2.46%	21.59%	Pass	Pass
Toluene	2	2	1	ug/l	88	83	< 100	5.85%	**55.07%**	Pass	**Fail**
Ethylbenzene	2	2	1	ug/l	282	275	290	2.51%	2.80%	Pass	Pass
m & p-Xylene	2	2	2	ug/l	484	485	510	20.64%	5.23%	Pass	Pass
ortho-Xylene	2	2	1	ug/l	< 50	< 50	< 100	0.00%	**66.67%**	Pass	**Fail**
Total Xylene	2	2	3	ug/l	484	485	510	20.64%	5.23%	Pass	Pass
Sum of BTEX	1	1	-	ug/l	8660	8460	10500	2.34%	19.21%	Pass	Pass
Naphthalene	1	1	20	ug/l	35.7	31	< 100	14.09%	33.37%	Pass	Pass-1
PAHs											
Naphthalene	5	5	1	ug/l	72	76	76	5.41%	5.41%	Pass	Pass
Acenaphthylene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Acenaphthene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Fluorene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Phenanthrene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Anthracene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Fluoranthene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Pyrene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Benz(a)anthracene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Chrysene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Benzo(k)fluoranthene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Benzo(a)pyrene	0.5	0.5	1	ug/l	< 0.5	< 0.5	< 1	0.00%	0.00%	Pass	Pass
Indeno(1.2.3.cd)pyrene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Dibenz(a.h)anthracene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Benzo(g.h.i)perylene	1	1	1	ug/l	< 1	< 1	< 1	0.00%	0.00%	Pass	Pass
Sum of Polycyclic Aromatic Hydrocarbons	0.5	0.5	1	ug/l	35.7	31	80	14.09%	**76.58%**	Pass	**Fail**

RPD Control Limits
Pass - RPD <= 30%
Pass-1 - RPD > 30%, Analysis results < 10 times Detection Limit
Pass-2 - RPD > 30% and RPD <= 50%, Analysis result > 10 times Detection Limit and < 20 times Detection Limit
Exceeds RPD Control Limits

Table 3b - Analytical Results - Groundwater, WQ
Sample Results - Caltex Suite I, Caltex Suite II
22176 - CALWELL Service Station
URS Job No.22176

				method_analyte_group	Caltex Suite I																
				chemical_name	C6-C10 Fraction	C6-C10 Fraction minus BTEX (F1)	>C10-C16 Fraction	>C10-C16 Fraction minus Naphthalene (F2	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (sum)	Benzene	Toluene	Ethylbenzene	m & p-Xylene	ortho-Xylene	Total Xylene	Sum of BTEX	Naphthalene	Naphthalene
				LOR	20	20	100	100	100	100	100	1	2	2	2	2	2	1	1	5
				Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Sample Location	**Date Sampled**	**Sample ID**	**Depth Range (m)**	**Sample Type**																
	31/08/2015	22176_QC300_150831		RB	< 20	< 20	< 100 J	< 100	< 100 J	< 100 J	< 100	< 1	< 2	< 2	< 2	< 2	< 2	< 1	< 1 J	< 5
	31/08/2015	TB_22176		TB	< 20	< 20						< 1	< 2	< 2	< 2	< 2	< 2	< 1		< 5
Statistical Summary																				
Number of Results					2	2	1	1	1	1	1	2	2	2	2	2	2	2	3	3
Number of Detects					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					< 20	< 20	< 100	< 100	< 100	< 100	< 100	< 1	< 2	< 2	< 2	< 2	< 2	< 1	< 1	< 1
Minimum Detect					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum Concentration					< 20	< 20	< 100	< 100	< 100	< 100	< 100	< 1	< 2	< 2	< 2	< 2	< 2	< 1	< 5	< 5
Maximum Detect					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Concentration					10	10	50	50	50	50	50	0.5	1	1	1	1	1	0.5	1.833	1.833
Geometric Average					10	10	50	50	50	50	50	0.5	1	1	1	1	1	0.5	1.462	1.462
Standard Deviation					0	0						0	0	0	0	0	0	0	1.155	1.155
Median Average					10	10	50	50	50	50	50	0.5	1	1	1	1	1	0.5	2.5	2.5
Geometric Standard Deviation					1	1	-	-	-	-	-	1	1	1	1	1	1	1	2.533	2.533
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Legend:
LOR – Limit of Recording
- Not analysed / not calculated
* LOR Exceeds Guideline Trigger Value
Sample Type: N - Primary, FD - Duplicate, FT - Triplicate

Action Levels:

Lab Qualifiers:
J - Estimated value.

Table 3b - Analytical Results - Groundwater, WQ
Sample Results - Caltex Suite I, Caltex Suite II
22176 - CALWELL Service Station
URS Job No.22176

				method_analyte_group	Caltex Suite II																	
				chemical_name	Naphthalene	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Sum of Polycyclic Aromatic Hydrocarbons	Benzo(b+j)fluoranthene
				LOR	1	5	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	0.5	1
				Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Sample Location	**Date Sampled**	**Sample ID**	**Depth Range (m)**	**Sample Type**																		
	31/08/2015	22176_QC300_150831		RB	< 1 J	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.5	< 1	< 1	< 1	< 0.5	< 1
	31/08/2015	TB_22176		TB		< 5																
Statistical Summary																						
Number of Results					3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of Detects					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.5	< 1	< 1	< 1	< 0.5	< 1
Minimum Detect					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum Concentration					< 5	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.5	< 1	< 1	< 1	< 0.5	< 1
Maximum Detect					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Concentration					1.833	1.833	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.5	0.5	0.5	0.25	0.5
Geometric Average					1.462	1.462	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.5	0.5	0.5	0.25	0.5
Standard Deviation					1.155	1.155																
Median Average					2.5	2.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.5	0.5	0.5	0.25	0.5
Geometric Standard Deviation					2.533	2.533	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Legend:
LOR – Limit of Recording
- Not analysed / not calculated
* LOR Exceeds Guideline Trigger Value
Sample Type: N - Primary, FD - Duplicate, FT - Triplicate

Action Levels:

Lab Qualifiers:
J - Estimated value.

URS

APPENDIX D FIELD SHEETS

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RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0.0 ppm	100.0 ppm	Lot:1805792 Cyl:9	☑

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
28/08/2015	100 ppm	102.1 ppm	☑

☑ Battery Status 100
☑ 10 minutes test complete
☑ Spare battery status (Min 5.5 volts)
☑ Electrical Safety Tag attached (AS/NZS 3760)

Tag No: 000226

Valid to: 18/11/2015

☑ Performance check (pump, lamp, sensor)
☑ Data cleared
☑ Filters checked

Date: 28/08/2015

Signed: Sch 2.2(a)(ii)

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☑	☐	MiniRAE 2000 PID / Operational Check / Battery Status 100%
☑	☐	Lamp 10.6 eV, Compound Set to: ISOBUTYLENE Cffactor: 1
☑	☐	Protective yellow rubber boot
☑	☐	Inlet probe (attached to PID)
☑	☐	Spare water trap filter(s) Qty 1
☑	☐	Charger 240V to 12V1250mA
☑	☐	Cradle and Travel Charger
☑	☐	Instruction Manual behind foam on the lid of case
☑	☐	Quick Guide Sheet behind foam on the lid of case
☑	☐	Spare Alkaline Battery Compartment with batteries
☑	☐	Inline Moisture trap Filter Guide Laminated
☒	☐	Calibration regulator & tubing (optional)
☒	☐	Data cable and Software CD (optional)
☑	☐	Carry Case
☑	☐	Check to confirm electrical safety (tag must be valid)

Date: 28/08/2015

Signed: Sch 2.2(a)(ii)

TFS Reference	CS00 3251	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	PID3000-12	Condition on return:	
Equipment Serial No.	592913163		

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RENTALS

Equipment Certification Report - Impact Pro Multi-Gas Detector

This Gas Meter has been performance checked/calibrated as follows:

- ✓ Fresh Air Calibration for all Sensors
- ✓ CH4 (combustibles)
- ✓ O2 00.0% volume check only within +/- 2%
- ✓ Charged
- ✓ 10 minute test complete
- ✓ Electrical Safety Tag attached (AS/NZS 3760)
- ✓ CO 100ppm Span
- ✓ 50% LEL (2.5%vol = 25,000ppm) Span
- ✓ H2S 40ppm Span n
- ✓ Spare Battery min 4.2v Volts

Tag no: 000218

Valid to: 13/11/2015

* Calibration Gas traceability information available upon request

Date: 28/08/2015 Sch 2.2(a)(ii) MILENKO

Signed: [redacted]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
✓			Impact Pro Gas Detector
✓			Monitor / Performance check / Bat % 100%
✓			Monitor setup for METHANE
✓			Power supply 240/12v with base station
✓			Flow adaptor [Grey] for calibration with hose
✓			Pump adaptor [Black] with hose and Inline filter
✓			Battery Cases with 4 Alkaline Batteries
✓			Allen Key located back of Instrument to open battery
✓			Spare inline filters /
✓			Instruction Manual behind foam on the lid of case
✓			Quick Use Guide behind foam on the lid of case
✓			Carry Case
			Regulator included:
			Cal Gas

Processors Signature/ Initials MS

Quote Reference	CS003251	Condition on return
Customer Ref		
Equipment ID	IMPPRO-15	
Equipment serial no.	2EL1402404	
Return Date	/ /	
Return Time		

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RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0.0 ppm	100.0 ppm	Lot:1805792 Cyl:9	☑

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
28/08/2015	100 ppm	100.0 ppm	☑

- ☑ Battery Status 100%
- ☑ 10 minutes test complete
- ☑ Spare battery status (Min 5.5 volts)
- ☑ Electrical Safety Tag attached (AS/NZS 3760)
  - Tag No: 000176
  - Valid to: 13/10/2015
- ☑ Performance check (pump, lamp, sensor)
- ☑ Data cleared
- ☑ Filters checked

Date: 28/09/2015

Signed: Sch 2.2(a)(ii)

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☑	☐	MiniRAE 2000 PID / Operational Check / Battery Status 100%
☑	☐	Lamp 10.6 eV, Compound Set to: ISOBUTYLENE, Correction factor: 1
☑	☐	Protective yellow rubber boot
☑	☐	Inlet probe (attached to PID)
☑	☐	Spare water trap filter(s) Qty 1
☑	☐	Charger 240V to 12V1250mA
☑	☐	Cradle and Travel Charger
☑	☐	Instruction Manual behind foam on the lid of case "
☑	☐	Quick Guide Sheet behind foam on the lid of case "
☑	☐	Spare Alkaline Battery Compartment with batteries
☑	☐	Inline Moisture trap Filter Guide Laminated
☒	☐	Calibration regulator & tubing (optional)
☒	☐	Data cable and Software CD (optional)
☑	☐	Carry Case
☐	☐	Check to confirm electrical safety (tag must be valid)

Date: 28/08/2015

Signed: Sch 2.2(a)(ii)

TFS Reference	CS003251	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	PID3000-14	Condition on return:	
Equipment Serial No.	592913297		

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RENTALS

Equipment Certification Report - Impact Pro Multi-Gas Detector

This Gas Meter has been performance checked/calibrated as follows:

- ✓ Fresh Air Calibration for all Sensors
- ✓ CH4 (combustibles)
- ✓ O2 00.0% volume check only within +/- 2%
- ✓ Charged
- ✓ 10 minute test complete
- ✓ Electrical Safety Tag attached (AS/NZS 3760)
- ✓ CO 100ppm Span
- ✓ 50% LEL (2.5%vol = 25,000ppm) Span
- ✓ H2S 40ppm Span n
- ✓ Spare Battery min 4.2v Volts

Tag no: 000151

Valid to: 08/10/2015

* Calibration Gas traceability information available upon request

Date: 28/08/2015 Checke[redacted] MILENKO

Signed: [redacted]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
✓			Impact Pro Gas Detector
✓			Monitor / Performance check / Bat % 100%
✓			Monitor setup for METHANE
✓			Power supply 240/12v with base station
✓			Flow adaptor [Grey] for calibration with hose
✓			Pump adaptor [Black] with hose and Inline filter
✓			Battery Cases with 4 Alkaline Batteries
✓			Allen Key located back of Instrument to open battery
✓			Spare inline filters ____
✓			Instruction Manual behind foam on the lid of case
✓			Quick Use Guide behind foam on the lid of case
✓			Carry Case
			Regulator included: ____
			Cal Gas [redacted]

Processors Signature/ Initials [redacted]

Quote Reference	CS003251	Condition on return
Customer Ref		
Equipment ID	IMPPRO-16	
Equipment serial no.	ZEC 1402598	
Return Date	/ /	
Return Time		

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RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

Cleaned/Tested Pass? ☑Yes ☐No

☑Probe

☑Tape/Reel

☑Performance Test & Battery Voltage Check (9 v) 8.0v minimum

Date: 28/08/2015 Sch 2.2(a)(ii) : MILENKO

Signed: [redacted]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
☑	☐	☐	Operations check OK
☑	☐	☐	Plastic Box / Bag
☑	☐	☐	2x Spare 9V Battery Qty 1
☑	☐	☐	Probe Cleaning Brush
☐	☐	☐	Decon
☑	☐	☐	Instruction leaflet
☑	☐	☐	Tape Guide
☐	☐	☐	

Processors Signature/ Initials Sch 2.2(a)(ii) [redacted]

Quote Reference	CS003251	Condition on return
Customer Ref		
Equipment ID	SOL122-18	
Equipment serial no.	237571	
Return Date	/ /	
Return Time		

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RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

Cleaned/Tested Pass? ☑Yes ☐No

☐Probe

☑Tape/Reel

☑Performance Test & Battery Voltage Check (8.20 v) 8.0v minimum

Date: 28/08/2015 Che[redacted] MILENKO

Signed: [redacted]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
☑	☐	☐	Operations check OK
☑	☐	☐	Plastic Box / Bag
☑	☐	☐	2 x Spare 9V Battery Qty 1
☑	☐	☐	Probe Cleaning Brush
☐	☐	☐	Decon
☑	☐	☐	Instruction leaflet
☑	☐	☐	Tape Guide
☐	☐	☐	

Processors Signature/ Initials [redacted]

Quote Reference	CS003251	Condition on return
Customer Ref		
Equipment ID	SOL122-45	
Equipment serial no.	250748	
Return Date	/ /	
Return Time		

ThermoFisher SCIENTIFIC

RENTALS

Equipment Report – Geo Pump 2 PERISTALTIC PUMP

This pump has been cleaned and checked:

☑ Clean and check all components	☑ Ops check

Date: 28/08/2015 Sch 2.2(a)(ii) MILENKO

Signed: [redacted]

☑ Electrical Safety Tag attached (AS/NZS 3760)

Tag No: 000233

Valid to: 19/11/2015

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
✓			Peristaltic Model (GP2) Pump, Alligator Clips
✓			Instruction Sheet
✓			3/8" Medical Grade Silicone Tubing (pump head) 30cm
✓			2 metal Hose Clips
✓			Transport Case
✓			Charger
			Electrical Safety Tag attached (AS/NZS 3760
✓			2 X BATTERY

Processors Signature/ Initials Sch 2.2(a)(ii) [redacted]

EE Quote Reference	CS003251	Condition on return
Customer Ref		
Equipment ID	GP2WA1	
Equipment serial no.		
Return Date	/ /	
Return Time		

ThermoFisher SCIENTIFIC

RENTALS

Equipment Report – Geo Pump 2 PERISTALTIC PUMP

This pump has been cleaned and checked:

☑ Clean and check all components	✓ Ops check

Date: 28/08/2015 Sch 2.2(a)(ii) MILENKO

Signed: [redacted]

☑ Electrical Safety Tag attached (AS/NZS 3760)

Tag No: 000 240

Valid to: 28/11/2015

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
✓			Peristaltic Model (GP2) Pump, Alligator Clips
✓			Instruction Sheet
✓			3/8" Medical Grade Silicone Tubing (pump head) 30cm
✓			2 metal Hose Clips
✓			Transport Case
✓			Charger
			Electrical Safety Tag attached (AS/NZS 3760
✓			2 X BATTERIES

Processors Signature/ Initials Sch 2.2(a)(ii) [redacted]

EE Quote Reference	CS003251	Condition on return
Customer Ref		
Equipment ID	GP2-7	
Equipment serial no.		
Return Date	/ /	
Return Time		

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.00 pH	4.00 pH	1	☑
Conductivity	12,880 uS/cm	N/A uS/cm	12.88 uS/cm		☑
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		☑
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		☑

☑ Battery Status 100

☑ Electrical Safety Tag attached (AS/NZS 3760)

Tag No: N/A

Valid to: 17/11/2015

☑ Temperature 21.7 °C

☐ Electrodes Cleaned and checked

Date: 28/08/2015

Signed: Sch 2.2(a)(ii)

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☑	☐	iPod Touch 5 with waterproof casing
☑	☐	pH sensor/Redox (ORP) sensor
☑	☐	Conductivity/TDS sensor
☑	☐	Dissolved oxygen sensor
☑	☐	Red caps for probe and Bluetooth battery pack
☑	☐	Connector cable 1.5 m
☑	☐	Bluetooth Battery Pack Serial #: 373072
☑	☐	Spare 4 AA batteries
☑	☐	AC charger with USB cable
☑	☐	Car changer with USB cable
☑	☐	Instruction Manual
☑	☐	Quick Guide
☑	☐	Calibration cup with vented cap and sponge
☑	☐	Storage cap with sponge
☑	☐	SS Protective Shroud
☑	☐	SmarTROLL MP Flow Cell
☑	☐	Check to confirm electrical safety (tag must be valid)
☐	☐	_____

Date: 28/08/2015

Signed: Sch 2.2(a)(ii)

SBP 371590 +1.5m cable

TFS Reference	CS003251	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	SMART – 26	Condition on return:	
Equipment Serial No.	392390		

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.00 pH	4.01 pH	1	☑
Conductivity	12,880 uS/cm	N/A uS/cm	12.88 uS/cm		☑
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		☑
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		☑

☑ Battery Status 100 %
☑ Electrical Safety Tag attached (AS/NZS 3760)

☑ Temperature 21.7 °C
☑ Electrodes Cleaned and checked

Tag No: N/A

Valid to: 17/4/15

Date: 23/08/2015

Signed: Sch 2.2(a)(ii)

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☑	☐	iPod Touch 5 with waterproof casing
☑	☐	pH sensor/Redox (ORP) sensor
☑	☐	Conductivity/TDS sensor
☑	☐	Dissolved oxygen sensor
☑	☐	Red caps for probe and Bluetooth battery pack
☑	☐	Connector cable ____m
☑	☐	Bluetooth Battery Pack Serial #: 596993
☑	☐	Spare 4 AA batteries
☑	☐	AC charger with USB cable
☑	☐	Car changer with USB cable
☑	☐	Instruction Manual
☑	☐	Quick Guide
☑	☐	Calibration cup with vented cap and sponge
☑	☐	Storage cap with sponge
☑	☐	SS Protective Shroud
☑	☐	SmarTROLL MP Flow Cell
☑	☐	Check to confirm electrical safety (tag must be valid)
☐	☐	_____

Date: 23/08/2015

Signed: Sch 2.2(a)(ii)

SBP 40.3090 T4.6M Cable

TFS Reference	CS 033251	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	SMART ~ 4	Condition on return:	
Equipment Serial No.	364023		

ThermoFisher SCIENTIFIC

Equipment Report – Micropurge Kit (MP15)

This system has been performance checked as follows:

Sample Pro Pump		
☑ Components Cleaned / checked	Ops check	
☑ MP15 Controller	☐ Included in kit	☐ Not included in kit
☑ Components Cleaned / checked	Ops check	
☑ Battery check – On/Off	Flow response	

Date: 28/08/2015 Checked by: Dave O'Neill

Signed: Sch 2.2(a)(ii)

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
☑	☐	☐	MP15 Control & Power Pack
☑	☐	☐	CO2 cylinder (installed in MP15 backpack)
☑	☐	☐	2 Stage gas regulator
☑	☐	☐	Spanner or shifter
☑	☐	☐	Quick Start Guide
☑	☐	☐	MP15 Users Guide + Pump operating instructions
☑	☐	☐	Sample Pro Stainless Steel Pump ID: 05P6P8
☑	☐	☐	Bladder X 2
☑	☐	☐	Flow cell ID: E FCSCD-3
☑	☐	☐	Stainless Steel Hanger Cable 50 m
☑	☐	☐	Spare CO2 Cylinders, quantity: 1
☑	☐	☐	Gas Cylinder CO2 - D Size ID:
☑	☐	☐	Maintenance kit (O rings, fittings, SS check ball, collett & screen if applicable)

Processors Signature/ Initials Sch 2.2(a)(ii)

EE Quote Reference	CS0053251	Condition on return
Customer Ref		
Equipment ID	QMP15SM	
Equipment serial no.		
Return Date	/ /	
Return Time		

ThermoFisher SCIENTIFIC

The world leader in serving science

RENTALS

Equipment Report - GEOTECHNICAL INSTRUMENTS GA5000

This Gas Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Zero	Span	Traceability Lot #	Pass?
CH_4	60 %	0.0 %	60.0 %	1673301 C30	☑
CO_2	40 %	----------	40.0 %	1673301 C30	☑
O_2	20.9 %	0.0 %	20.9 %	AIR	☑
CO	100 ppm	0 ppm	100 ppm	1712214 C12	☑
H_2S	25 ppm	0 ppm	25 ppm	1801774 C144	☑
H_2 CO/H2 compensated only	1000 ppm	0 ppm	1000 ppm	5095333-1	☑

☑ Battery Status 100%
☑ 10 minutes test complete
☑ Electrical Safety Tag attached (AS/NZS 3760)

☑ In-Line filters checked
☑ Data cleared

Tag No: 000208

Valid to: 28/10/2015

Date: 28/08/2015

Signed: Sch 2.2(a)(ii)

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☑	☐	Performance check / Battery 100%
☑	☐	Sampling tubing with In-Line filter
☑	☐	Out let tubing (internal flow pod only)
☑	☐	Well cap Quick connect fitting with tubing and In-Line filter
☑	☐	Power Supply
☑	☐	Operating Quick Guide behind foam on lid of case "
☑	☐	Manual behind foam on lid of case "
☑	☐	Spare Inline Filters Qty 1
☑	☐	H_2S filter
☑	☐	Data Cable and Software CD
☐	☐	Soft case with carry strap
☐	☐	Carry case
☑	☐	Check to confirm electrical safety (tag must be valid)

Date: 28/08/2015

Signed: Sch 2.2(a)(ii)

TFS Reference	CS00325/	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	D-GA5000-	Condition on return:	
Equipment Serial No.	6500156		

AGA

Mon Aug 31, 2015

CALTEX ACT ~~GATE~~ ESA Q3 43218537 - Day 1 of 4

Site: Caldwell (22176)
~15°C, sunny, clear

SCOPE: Gauge & sample MW01-03 (3 wells) TRH, BTEXN, PAH
Slug test

10:15 on site w/ Dan
tailgate meeting
organize gear & set up on site

11:30 Set up on MW01 (AGA) & MW02 (DD)
↓
matrix spike taken

12:30 MW02 - slug test w/ DD

13:20 Set up on MW03 (AGA)

14:45 AGA & DD depart site for [redacted] Sch 2.2(a)(ii)

⇒ 3 wells sampled:
MW01 : primary + matrix spike
MW02 : prim + dup, trip, lab dup
MW03 : prim

9-2:45

4 4 45

URS Caldwell 22176 **Daily Field Activity Sheet**

Date	31/8/15	**Job Name:**	Caltex Est QS	**Job Number:**	43218537
Field Staff:	DDT, AK			**Project Manager:**	SR
Time on site:	10:20		**Time off site:**	1445	

Contractor company:	NA
Contractor staff on site:	
Equipment in use:	Pe pump, PI, LEL, PID
Weather:	Sunny

Toolbox: Sampling, 3 wells, 1 slug test, Vehicles to be used as barricade, sampling to be done together initially.
Emergency = 1 long sound of horn
Evacuation pt is indicated on map

10:55 start preping for sampling - sort out gear

11:30 set up at wells MW01 (AK) MW02 (DDT)

11:50 DDT notices smart troll is faulty - calls thermofisher speaks with david. is told to wait for return call

12:30 AK completes sampling MW01, heads to MW02 where DDT runs through how to complete a slug test (bailer)

12:40 -55 complete first ~~bailer~~ slug test.

12:55 - 13:15 complete second slug test

13:20 DDT calls thermofisher, speaks to david sorts out smart troll issue

13:15 AK starts sampling MW03

13:40 DDT starts sampling MW02.

14:00 MW02 sampled

14:45 off site

QA/QC Record

Primary Sample ID	Duplicate ID	Triplicate ID
QC100	MW02	
QC200	MW02	
QC300	Rinsate	

Trip Blank ID	Date
Trip Blank	31/8/15

Field Staff Signature: Sch 2.2(a)(ii) DDT

URS

Daily Calibration Sheet

Date		**Job Name:**		**Job Number:**	
Field Staff:				**Project Manager:**	
Weather:					

ITEM	LEL	PID	Acidity		Conductivity	RedOx	DO	
Units			pH	pH	uS/cm	mV	ppm	
Model			**TPS 90FLMV Multiparameter Chemkit**					
Calibration Standard			**4**	**7**	**1413**	**240**	**-**	
Chemkit Serial #								
Calibration Time								
Calibration Reading								
Comment								
Chemkit Serial #								
Calibration Time								
Calibration Reading								
Comment								
Chemkit Serial #								
Calibration Time								
Calibration Reading								
Comment								

Checks

Time								
Reading								
Comment								
Time								
Reading								
Comment								
Time								
Reading								
Comment								

Notes

Field Staff Signature:

CALTEX AUSTRALIA PETROLEUM PTY LTD

2015 ENVIRONMENTAL SITE ASSESSMENTS PROGRAM
RFP (72) RESPONSE

CALWELL
(22176)
AUSTRALIAN CAPITAL TERRITORY

URS

Figure E-4

E.4 Calwell ACT – 22176

Table 1 – Work Scope for Calwell ACT (22176)

Caltex RfP Objective	Key Data Gaps	Base Works	Contingency Works	Innovation / Cost Saving	Site Specific Assumptions
ACT Operational compliance under Environmental Authorisation for the site.	A site conceptual model and a site figure with sample locations are presented after this table. Key data gaps include: **Non-conformance to Environmental Authorisation:** • Environmental Authorisation requires annual monitoring of groundwater monitoring wells and last reported GME was in 2013; • Impacts in groundwater on-site exceed NEPM and Environmental Authorisation criteria however no sensitive receptors are identified in close proximity to the site. **URS Revised Objective** • Dissolved phase delineation through GME and hydroconductivity testing	**Environmental Authorisation Compliance Monitoring:** • Monitor existing wells for COPC per Environmental Authorisation (rationale detailed in the site specific SAP below). • Conduct field tests to characterise site-specific hydraulic conductivity. **Deliverables:** • GME Report Details of groundwater sample locations as well as analyses are presented in the next figure and table.	No additional works are suggested	• Use of HydraSleeves for groundwater monitoring rather than low flow pumps as part of the NGP.	Environmental Authorisation compliance monitoring will only be undertaken annually as per updated 2014 ACT Service Station Guidelines

Table 4 - Conceptual Site Model for Caltex Calwell (22176)

SITE ASPECT	DETAILS	
Zoning	• **Site:** Commercial (CZ3) Services Zone which allows commercial and residential land use, with development consent; and • **Down-gradient:** Calwell Club to north-east, Commercial (CZ3) Services Zone. Calwell Shopping Centre to east, Commercial (CZ1) Core Zone.	
Potential Sources of Contamination	• Existing USTs at the site; • Previous USTs and/or ASTs at the site (no evidence of additional storage tanks being present prior to current infrastructure, which is understood to have been installed in 1985); • Associated fuel lines and dispensing pumps; • Remote fill points; • Materials stored/used in the auto-electrician and 'Midas' mechanic workshop; and • Potential use of fill materials of unknown origin.	
Geology	**Regional Geology:** • The site is proximal to the boundary of the Middle-Late Ordovician 'Adaminaby Beds' and the Late Silurian 'Deakin Volcanics'; • The Middle-Late Ordovician 'Adaminaby Beds' – superseded by the 'Adaminaby Group (Geoscience Australia, *Australian Stratigraphic Units Database*, updated 2014) – are comprised of a "*turbidic sequence of sandstone, mudstone, shale, carbonaceous shale, greywacke, chert, quartzite, phyllite and slate*"; and • The Late Silurian 'Deakin Volcanics' are comprised of "*Rhyodacitic ignimbrite and minor volcaniclastic and argillaceous sediments*". •	**Local Geology:** • 0 - 1 mbgl) fill of sandy and clayey soils; • 1 - 2.3 mbgl (or up to 4.8 mbgl) of orange / grey / brown sandy clay or clayey sand with some gravels; and • 2.3 - 18.0 mbgl of grey / brown 'volcanic bedrock' (possibly granite).
Depth and Flow of groundwater	**Perched/Shallow Aquifer:** • Not considered to be present; and • Moisture content of shallow soil (up to 1.0 mbgl) described as "slightly moist", and not considered to be representative of a perched or shallow aquifer.	**Deep/Regional Aquifer:** • The depth to the saturated zone of the local aquifer is estimated to range from 11.0 - 17.5 mbgl from observations during drilling. The groundwater in the aquifer is confined, resulting in the potentiometric surface being recorded higher than the depth of the saturated aquifer intercepted, ranging from 3.2 - 4.4 mbgl (as recorded in 2011); • Flow in the deeper aquifer is north-east at a gradient of 0.08; and • Hydraulic conductivities have not been inferred in previous investigations, however literature values of conductivity of weathered granite ranges from 0.29 - 4.49 m/day (Domenico, P.A. and F.W. Schwartz, *Physical and Chemical Hydrogeology* 1990).
Influences on Groundwater Conditions at the Site	• The elevation of the water table is not expected to significantly fluctuate based on seasonal rainfall data, and/or during or post periods of above average rainfall; • Groundwater is confined or semi-confined by sandy clay layers, resulting in levels in wells recorded at higher than the saturated depth; • Groundwater may only be present within fracture zones of the underlying bedrock, resulting in groundwater being intermittently encountered at future boreholes at the site, and dependent on whether the water-bearing fracture zone is intercepted when drilling; • Regional maps showed the nearest surface water body to be Monks Creek, located approximately 160 m north-east and down-gradient of the site; and • Groundwater beneath the site is not expected to be subject to tidal influence due to the site being over 100 km from the coast.	

Table 2 - Groundwater Sampling & Analytical Program for Caltex Calwell (22176)

Proposed Sample Location ID	Purpose - Soil Bore (SB) or Monitoring Well (MW)	Maximum Proposed Depth (m)	$TRHC_6$-C_{40}/ BTEXN	PAH	Metals - cadmium, chromium, copper, nickel, arsenic, zinc and mercury	Total Organic Carbon / pH / Cation Exchange Capacity	Asbestos	Chlorinated Hydrocarbons	for Sample Rationale Location Selection
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
Subtotal			0	0	0	0	0	0	
QAQC			0	0	0	0	0	0	
TOTALS			**0**	**0**	**0**	**0**	**0**	**0**	

Table 3 – Groundwater Sampling & Analytical Program for Caltex Calwell (22176)

Well ID	$TRHC_6$-C_{40}/ BTEXN	PAH	MAHs	LNAPL - Viscosity and Density	for sampling selection Rationale
MW01	1	1	-		On-site well monitoring in accordance with site environmental authorisation. Impacts previously identified.
MW02	1	1	-	-	On-site well monitoring in accordance with site environmental authorisation. Impacts previously identified.
MW03	1	1	-	-	On-site well monitoring in accordance with site environmental authorisation. Impacts previously identified.
Subtotal	3	3	0	0	
QAQC	3	3	0	0	
TOTALS	**6**	**6**		**0**	

SITE ASPECT	DETAILS				
Nature of Soil Impacts	**Shallow Impacts (0 – 2 mbgl):** • TPH (C_{10}-C_{36} fraction) concentrations exceeding the adopted soil assessment criteria (NSW EPA *Contaminated Sites: Guidelines for Assessing Service Station Sites*, 1994) were detected at one (1) shallow soil location (BH02/MW02 at 0.9 - 1.0 mbgl) down-gradient of the UST farm; • TPH (C_{10}-C_{36} fraction) impacts were not delineated laterally; and • TPH (C_{10}-C_{36} fraction) impacts were conservatively delineated vertically, to a depth of 3.9 mbgl.		**Deep Impacts (greater than 2 mbgl):** • TPH (C_6-C_9 fraction), toluene and xylene concentrations exceeding the adopted soil assessment criteria (NSW EPA *Contaminated Sites: Guidelines for Assessing Service Station Sites*, 1994 [see endnote 1]) were detected at one (1) deep soil location (BH02/MW02 at 3.9 - 4.0 mbgl) down-gradient of the UST farm; • TPH (C_{10}-C_{36} fraction) and toluene impacts were not delineated laterally; and • TPH (C_{10}-C_{36} fraction) and toluene impacts were conservatively delineated vertically, to a depth of 9.9 mbgl.		
Nature of Dissolved Impacts	**Deep/Regional aquifer:** There is no observed perched/ shallow aquier. • Two (2) rounds of groundwater monitoring have been conducted; in 2011 (by AECOM) and 2013 (by PB); • In 2011, BTEX analytes were recorded significantly above the adopted groundwater assessment criteria (ACT EPA, *Environmental Guidelines for Service Station Sites and Hydrocarbon Storage*, ACT EPA, 2009) in wells MW01 and MW02. Lead was also recorded above the adopted groundwater assessment criteria (ACT EPA, 2009) in well MW02. The adopted assessment criteria (ACT EPA, 2009) corresponds to the water quality standards identified in the Environmental Authorisation for the site. TPH (C_6-C_9 fraction) was detected at significant concentrations in wells MW01 and MW02, however no groundwater assessment criteria was considered applicable to be adopted for this analyte; • In 2013, benzene and xylene were recorded above the adopted groundwater assessment criteria (Amended ASC NEPM – Groundwater Investigation levels for fresh water aquatic ecosystems, groundwater investigation levels for drinking water, and/or groundwater health screening levels for vapour intrusion Commercial / Industrial, 4 m to <8 m, sand) as applicable for wells MW01 and MW02; and • It is noted that the 2013 groundwater monitoring did not assess groundwater samples against the water quality standards specified in the Environmental Authorisation for the site. Review of groundwater impacts against this criteria indicates exceedances for benzene, ethylbenzene and/or xylene to be present in wells MW01 and MW02. It may also be assumed that exceedances for TPH (C_6-C_9 fraction) would also be present in well MW02, based on significant TRH (C_6-C_{10} fraction) concentrations recorded in well MW02.				
Nature of LNAPL impacts	• Not identified to be present, based on groundwater monitoring conducted in 2011 (by AECOM) and 2013 (by PB), ant NGP data from 2014.				
Potential Transport Mechanisms and Exposure Pathways	• Vapour inhalation from the volatilisation of soil or groundwater impacts to indoor and outdoor air; • Leaching of soil contaminants into groundwater; • Direct dermal contact or ingestion of contaminants in soil and/or groundwater; and • Lateral migration of hydrocarbons in groundwater.				
Potential Receptors	**On-site Ecological:** None	**Off-site Ecological:** • Monks Creek.	**On-site Workers:** • Commercial; and • Intrusive.	**Off-site Workers:** • Commercial: and • Intrusive.	**Off-site Residents:** Residences located 60 m west of the site
Complete S>P>R Exposure Pathways	No	No	No	No	No

SITE ASPECT	DETAILS				
Potentially Complete S>P>R Exposure Pathways	No	Groundwater impacts identified at locations MW01 and MW02 have not been delineated down-gradient (north-east), however Monks Creek is a concrete-lined stormwater channel.	Soil impacts identified on-site at location BH02/MW02 are potentially present from surface to 9.9 mbgl, and may be encountered during intrusive works. If the utility worker is operating in a trench in a confined space scenario, this could be considered a complete pathway.	No	As of May 2011 there were no registered groundwater extraction bores within a 1 km radial search area of the site (AECOM, 2011). Whilst newer or unregistered bores may potentially be present, it is not expected that impacts would migrate towards residential receptors based on the recorded groundwater flow direction.

S>P>R = Source -> Pathway -> Receptor

As the site is an active service station site, URS considers that the risks to on-site receptors associated with fugitive emissions from the operational service station activities are greater than the risks associated with the contamination present in the soil and groundwater beneath the site.

Additionally, URS considered that all future intrusive or construction works on the site would be undertaken in accordance with responsibilities under relevant Occupational Health and Safety legislation and relevant industry guidelines. Therefore, intrusive activities would be expected to be carried out under an appropriate site health and safety plan and as such, the potential risk of exposure to contaminants present on this site would be addressed accordingly. Therefore, URS focused on off-site intrusive workers only.

URS BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET

Project No 43218537 (22176) Project Name Caltex Location ~~Caltex~~ Wade St **BORE ID:** MW01

Development

Date ___/___/___
Developed by: ___
Well head condition: ___

Well Size	50 mm	100 mm
L/m	4	9

	Start	End
Time	~~1120~~	
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Micro-purge / Peri-Pump
Discharge Rate ___ L/min
Volume Removed ___ L/min
PSH Level ___ mbTOC
Comments ___

Field Analyses

Time	Vol Removed (L)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity)	OVA Monitoring - PID (ppm) / LEL (%) Well Head PID / LEL	OBZ PID / LEL	Bucket PID / LEL	Ambient PID / LEL
									8.6ppm			

Purging

Date 31 / 8 / 15
Developed by: AGA
Well head condition: good

Well Size	50 mm	100 mm
L/m	4	9

	Start	End
Time	11.20	11.55
Bore Depth (mbTOC)	10.26	
- SWL (mbTOC)	3.348	
x L/m		
= Bore Vol		

Development Method Bailer / Micro-purge / Peri-Pump
Discharge Rate ___ L/min
Volume Removed ___ L/min
PSH Level ___ mbTOC
Comments ___

Field Analyses

Time	Vol Removed (L)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity)	OVA Monitoring - PID (ppm) / LEL (%) Well Head PID / LEL	OBZ PID / LEL	Bucket PID / LEL	Ambient PID / LEL
11.40	0.5	30.2	2.69	7010	7.16	60.6	17.45	Clear, no odour	88/0			
11.44	1.0	30.9	2.75	805.6	7.15	37.0	17.56					
11.49	1.5	24.3	2.14	995.1	7.15	2.5	17.82					
11.54	2.0	9.2	0.82	1296.7	7.12	-31.7	18.27					
11.59	2.5	11.1	0.96	1316.3	7.14	-34.2	18.74					
12.03	3.0	11.0	0.93	1339.5	7.15	-35.1	19.01					
						→ Sampled @						

Sampling

Date 31 / 8 / 15
Sampled by: AGA
Sampling Method Bailer / Micro-purge / Peri-Pump

	Start	End
Time	11.20	11.55
SWL		

	Sample ID	TPH/BTEX VHC	TPH, Phenols, PAH, OCOP	Metals	Ferrous Fe	Water Qual	TOC, SO4		Methane	Other	Total
Container type and size		2x40ml Vial(G)	1L (G)	250 ml (P)	250 ml (P)	250 ml (P)	250 ml (P)	40 ml Vial(G)	40 ml Vial(G)		
		H2SO4	Nil	HNO3	HCL	Nil	HCL	Nil	Nil		
		Maroon	Yellow	Red	White	Green	White	White	White		
Primary	22176-MW01-150831	2	2								
Duplicate											
Triplicate											

Comments Matrix spike collected.

URS BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET

Project No 43218537 Project Name Calwell ESA Location ACT **BORE ID:** MW02

Development

Date __/__/__
Developed by:
Well head condition:

Well Size	50 mm	100 mm
L/m	4	9

	Start	End
Time		
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Micro-purge / Peri-Pump
Discharge Rate L/min
Volume Removed L/min
PSH Level mbTOC
Comments

Field Analyses / OVA Monitoring - PID (ppm) / LEL (%)

Time	Vol Removed (L)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity)	Well Head PID / LEL	OBZ PID / LEL	Bucket PID / LEL	Ambient PID / LEL

Purging

Date 31 / 8 / 15
Developed by: DDT
Well head condition: flooded good

Well Size	50 mm	100 mm
L/m	4	9

	Start	End
Time	1150	1425
Bore Depth (mbTOC)	13.94	
- SWL (mbTOC)	4.953	4.985
x L/m		
= Bore Vol		

Development Method Bailer / Micro-purge / Peri-Pump
Discharge Rate L/min
Volume Removed L/min
PSH Level mbTOC

PID. 3.5 LEL 0

Comments Small well faulty. Fixed 1330 over phone support with thermofisher (David)

Field Analyses / OVA Monitoring - PID (ppm) / LEL (%)

Time	Vol Removed (L)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity)	Well Head PID / LEL	OBZ PID / LEL	Bucket PID / LEL	Ambient PID / LEL
1345	0.25	17.6		883.3	7.35	-90	18.7	clear, yellow tinge				
1350	0.50	10.6		1111.0	7.10	-93.1	19.1	clear				
1359	1.00	4.2		1450.7	6.78	-91	18.64	clear				
1402	1.25	3.6		1653	6.94	-88.8	18.54	"				
1405	1.50	4.2		1973.5	6.90	-85.8	18.46	"				
1412	2.00	4.7		2233	6.87	-82	18.37	"				

= Sampled =

Sampling

Date 31 / 8 / 15
Sampling Method Bailer / Micro-purge / Peri-Pump
Sampled by:

	Start	End
Time	1620	
SWL		

Container type and size

	Sample ID	TPH/BTEX VHC 2x40ml Vial(G) H2SO4 Maroon	TPH, Phenols, PAH, OCOP 1L (G) Nil Yellow	Metals 250 ml (P) HNO3 Red	Ferrous Fe 250 ml (P) HCL White	Water Qual 250 ml (P) Nil Green	TOC, SO4 250 ml (P) HCL White	TOC, SO4 40 ml Vial(G) Nil White	Methane 40 ml Vial(G) Nil White	Other	Total
22176_ Primary	MW02_150831	2	2								
Duplicate	QC100_150831	1	1								
Triplicate	QC200_150831	1	1								

Comments Primary sample: double volume collected for lab dup

URS BORE DEVELOPMENT, PURGING AND GROUNDWATER SAMPLING DATA SHEET

Project No 43218537 (22176) Project Name Calwell Call Ex Location Were St **BORE ID:** MW03

Development

Date / /
Developed by:
Well head condition:

Well Size	50 mm	100 mm
L/m	4	9

	Start	End
Time	1330	
Bore Depth (mbTOC)	18.02	
- SWL (mbTOC)	4.673	
x L/m		
= Bore Vol		

Development Method Bailer / Micro-purge / Peri-Pump
Discharge Rate L/min
Volume Removed L/min
PSH Level mbTOC
Comments

Field Analyses

Time	Vol Removed (L)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity)

OVA Monitoring - PID (ppm) / LEL (%)

Well Head PID / LEL	OBZ PID / LEL	Bucket PID / LEL	Ambient PID / LEL

Purging

Date 31 / 8 / 15
Developed by: AGA
Well head condition: good

Well Size	50 mm	100 mm
L/m	4	9

	Start	End
Time	1330	1400
Bore Depth (mbTOC)		
- SWL (mbTOC)		
x L/m		
= Bore Vol		

Development Method Bailer / Micro-purge / Peri-Pump
Discharge Rate L/min
Volume Removed L/min
PSH Level mbTOC
Comments

Field Analyses

Time	Vol Removed (L)	Dissolved Oxygen (%)	Dissolved Oxygen (ppm)	EC (uS/cm)	pH	Redox (mV)	T (C)	Comments (Color, turbidity)
13.44	0.5	4.3	0.36	92.2	7.42	62.3	19.90	Clear, no odour
13.49	1.0	3.6	0.31	91.4	7.25	70.4	19.77	
13:54	1.5	3.3	0.27	90.4	7.12	75.4	19.72	
13:58	2.0	2.7	0.23	89.6	7.00	~~60.8~~ 60.8	19.63	

= Sampled =

OVA Monitoring - PID (ppm) / LEL (%)

Well Head PID / LEL	OBZ PID / LEL	Bucket PID / LEL	Ambient PID / LEL
0.2ppm/0			

Sampling

Date 31 / 8 / 15
Sampled by: AGA
Sampling Method Bailer / Micro-purge / Peri-Pump

	Start	End
Time	1330	1400
SWL	4.673	5.65

Sample ID	TPH/BTEX VHC	TPH, Phenols, PAH, OCOP	Metals	Ferrous Fe	Water Qual	TOC, SO4		Methane	Other	Total
Container type and size	2x40ml Vial(G)	1L (G)	250 ml (P)	250 ml (P)	250 ml (P)	250 ml (P)	40 ml Vial(G)	40 ml Vial(G)		
	H2SO4	Nil	HNO3	HCL	Nil	HCL	Nil	Nil		
	Maroon	Yellow	Red	White	Green	White	White	White		
Primary 22176_MW03_150831	1	1								2
Duplicate										
Triplicate										

Comments

Site and Job Number		Location Information	
Project Name:	Caltex ESA Q3	Well ID:	MW02
Job Number:	43218537	Stickup/ Flush:	
Client:	Caltex	Date:	31/8/15
Location:	Calwell	Location Details	Calwell
Gauging			
Depth to Product (mbtoc):	—	Well Casing Specific Volume (L/m):	
Depth to Water (mbtoc):	4.953	Bailer Dimensions - Length (mm):	
Total Depth of Well (m):	13.94	Bailer Dimensions - Diameter (mm):	
Depth to Top of Screen (m):		Volume of Slug/ Water (L):	1L
Depth to Bottom of Screen (m):		Number of Bails removed:	1
Well Casing Diameter (mm):	50mm	Expected Discplacement:	
Bore Diameter (mm):		Data Logger Details:	

Baildown Test

Date / Time Start: 31/8/15

Method (Bailer Type): Bailer 1L

Clock Time	Elapsed Time	Depth to LNAPL (mbtoc)	Depth to Water (mbtoc)	Comments
~~12:39:15~~				
12:39:37				
12:40:27			5.120	
12:40:44			5.09	
~~12:40:55~~			~~5.08~~	
12:41:00			5.08	
12:41:15			5.06	
12:41:27			5.05	
12:41:43			5.04	
12:42:02			5.03	
12:42:26			5.02	
12:43:35			5.00	
12:44:39			4.992	
12:44:52			4.990	
12:45:25			4.985	
12:46:44			4.980	
12:48:02			4.975	
12:51:04			4.970	

Record of Cummulative Volumes Bailed/Injected

Bail Number	Elapsed Time	Water Vol. (L)	LNAPL Vol. (L)	Comments
1				
2				
3				
4				

Authorisation

Sampler's name	Signature
Checked by	Signature

Site and Job Number		Location Information	
Project Name:	Caltex ESA Q3	Well ID:	MW02
Job Number:	43218537	Stickup / Flush:	
Client:	Caltex	Date:	31/8/15
Location:	Caldwell	Location Details	Caldwell

Gauging			
Depth to Product (mbtoc):		Well Casing Specific Volume (L/m):	
Depth to Water (mbtoc):	4.953	Bailer Dimensions - Length (mm):	
Total Depth of Well (m):	13.94	Bailer Dimensions - Diameter (mm):	
Depth to Top of Screen (m):		Volume of Slug/ Water (L):	
Depth to Bottom of Screen (m):		Number of Bails removed:	1
Well Casing Diameter (mm):	50mm	Expected Discplacement:	
Bore Diameter (mm):		Data Logger Details:	

Baildown Test

Date / Time Start

Method (Bailer Type):

Clock Time	Elapsed Time	Depth to LNAPL (mbtoc)	Depth to Water (mbtoc)	Comments
12:55:55			5.65	
12:56:29	34s		5.18	
12:56:41	12s		5.14	
12:56:48	7s		5.12	
12:56:53	5s		5.11	
12:56:59	6s		5.10	
12:57:05	6s		5.09	
12:57:13	8s		5.08	
12:57:21	8s		5.07	
12:57:33	12s		5.06	
12:57:46	13s		5.05	
12:58:03	17s		5.04	
12:58:21			5.03	
12:58:44			5.02	
12:59:13			5.01	
12:59:55			5.00	
13:00:59			4.99	
13:02:43			4.98	
13:04:07			4.975	
13:06:10			4.97	
13:11:30			4.965	

Record of Cummulative Volumes Bailed/Injected

Bail Number	Elapsed Time	Water Vol. (L)	LNAPL Vol. (L)	Comments
1				
2				
3				
4				

Authorisation

Sampler's name	Signature
Checked by	Signature

URS

APPENDIX E WASTE DOCUMENTS

BRANDSTER SERVICES
ABN 68 070 120 928

PHONE: (02) 9623 1177
FAX: (02) 9623 1002
WWW.BRANDSTERSERVICES.COM.AU

DOMESTIC & INDUSTRIAL SEPTIC TANK PUMP OUTS • INDUSTRIAL WASTE WATER • OILY WATER • STORM WATER • GROUND WATER PUMP OUTS
SYDNEY WATER & EPA LICENCED WASTE TREATMENT FACILITY
TRANSPORTER EPA LICENCE: 6414 – EPA DEPOT EPA LICENCE: 5973
24 HOUR 7-DAY SERVICE

UNIT 6, 15 LEEHOLM ROAD,
ST MARYS 2760 P.O. BOX 166
ST MARYS 1790

SERVICE DOCKET **S** 73032

VOLMAN

DATE: 23/9/15

ORDER NO: 647403

QTY	DESCRIPTION	
	50 Lts $120	
		TIME:
		: am pm Depart Depot
	PH 8.1	: am pm Arrive on Site
		: am pm Depart Site
		: am pm Arrive at Disposl Point
		: am pm Depart Disposal Point
		: am pm Arrive at Depot

Vehicle Rego No:	EFT DETAILS	SIGNATURE:
CBJ 41D	ANZ BANK	Sch 2.2(a)(ii)
Driver Name:	BSB: 012 408 ACC: 900317038	
MAX	Please quote inv no. on EFT deposits	

Out of scope

BRANDSTER SERVICES
ABN 68 070 120 928

PHONE: (02) 9623 1177
FAX: (02) 9623 1002
WWW.BRANDSTERSERVICES.COM.AU

DOMESTIC & INDUSTRIAL SEPTIC TANK PUMP OUTS • INDUSTRIAL WASTE WATER • OILY WATER • STORM WATER • GROUND WATER PUMP OUTS
SYDNEY WATER & EPA LICENCED WASTE TREATMENT FACILITY
TRANSPORTER EPA LICENCE: 6414 – EPA DEPOT EPA LICENCE: 5973
24 HOUR 7-DAY SERVICE

UNIT 6, 15 LEEHOLM ROAD,
ST MARYS 2760 P.O. BOX 166
ST MARYS 1790

SERVICE DOCKET **S** 73035

DATE: 24/9/15

ORDER NO: 647404

QTY	DESCRIPTION	
	200Lt DIRO	
	PW 7.9	TIME:
		: am pm Depart Depot
		: am pm Arrive on Site
		: am pm Depart Site
		: am pm Arrive at Disposl Point
		: am pm Depart Disposal Point
		: am pm Arrive at Depot

Vehicle Rego No:	EFT DETAILS	SIG
CP22HO	ANZ BANK	Sch 2.2(a)(ii)
Driver Name:	BSB: 012 408 ACC: 900317038	
MAT	Please quote inv no. on EFT deposits	

NSW Environment Protection Authority - Online Waste Tracking System

TRANSPORT CERTIFICATE - No. 2T00647404

Created by: Scott Hunter 07-Aug-2015 7:34 am **Status:** Created

CA no: 2C00090641 **CA start date:** 21-Oct-2014 **CA end date:** 20-Oct-2015

PART 1 (this part to be completed by consignor at pickup)

CONSIGNOR

VOLMAN ENTERPRISES
6 VERNA PLACE
QUAKERS HILL, NSW 2763

Contact: JOHN VOLMAN **Role:** Producer
Phone: Sch 2.2(a)(ii) **Email:** N/A
ABN: 72 085 860 537 **Fax:** (02) 9837 7350 **Emergency:** (04) 1828 9683
ANZSIC code: 0 **Licence no.:** NA

Pickup details: As above

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: 200 L S (required - Yes)
I declare that to the best of my knowledge and belief the above information is true and correct.
Name and Position (Bl Sch 2.2(a)(ii)
Signature ..... Date 24/9/15

PART 2 - TRANSPORT y the transporter at pickup)

VOLMAN ENTERPRIS
6 VERNA PLACE
QUAKERS HILL, NSW 2763

Contact: JOHN VOLMAN **Email:** Sch 2.2(a)(ii)@live.com.au
Phone: Sch 2.2(a)(ii) **Fax:** N/A **Transit state:** NSW
Licence no.: 11922 **Vehicle reg:** TBA **Transport type:** Road

Sch 2.2(a)(ii)

I declare that to the bes and belief the above information is true and correct.
Name and Position (Blo
Signature ..... Date 24/9/15

PART 3 - RECEIVING F o be completed by the receiving facility)

BRANDSTER SERVICES
UNIT 6 & 7 15 LEE HOLM ROAD
ST MARYS, NSW 2760

Contact: RHONDA SMITH **Email:** Sch 2.2(a)(ii)@brandsterservices.com.au
Phone: (02) 9623 1177 **Fax:** (02) 9623 1002
Licence no.: 5973 **Receiving facility ref no.:** N/A

Waste amount at arrival: 200 Date waste arrived at the facility: 24/9/15

ACCEPT / REJECT THE WASTE

☑ The receiving facility accepted the waste - Date accepted: 24/9/15 Date Processed: ..... Treatment: .....
☐ 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) SCOTT HUNTER
Signature Sch 2.2(a)(ii) Date 24/9/15

NOTE

AGENT / TRANSPORTER - PICK UP & TRANSPORT FROM VARIOUS SITES WITH IN SYDNEY METROPOLITIAN & REGIONAL AREAS

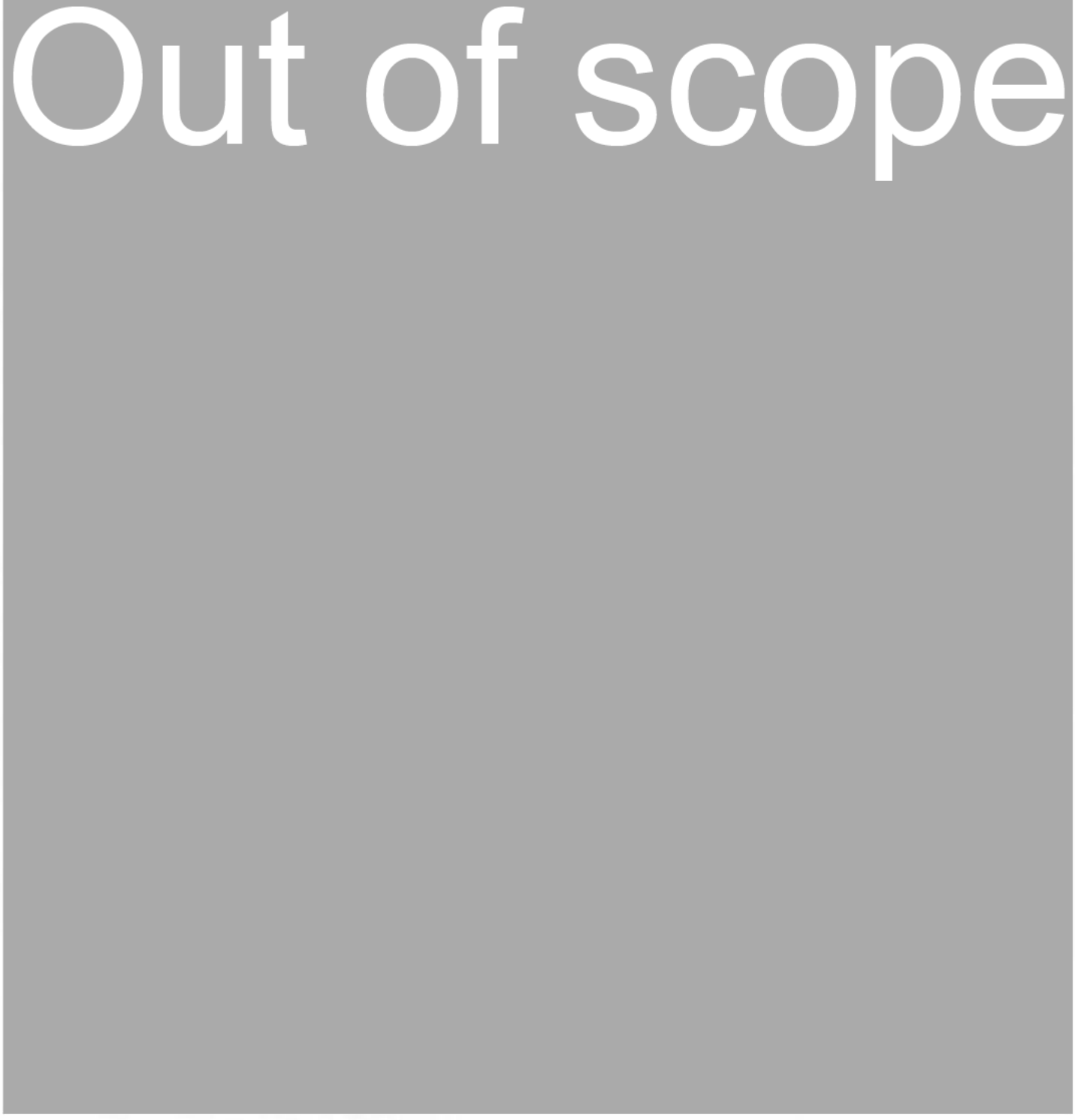
Out of scope CALMC 11, Out of scope

CB22 HD
T2.

H.C.T

Printed on 07-Aug-2015 7:33 am

573035


Out of scope

Out of scope

URS

APPENDIX F HYDROLOGICAL TESTING CALCULATIONS

SEEPAGE VELOCITY CALCULATION SPREADSHEET

Parameter	Unit	High Value	Low Value
A) Hydraulic Conductivity (K)			
Field Tested Values	m/day	0.07001	0.07001
Literature (see below or next tab)	m/day		
B) Effective Porosity (p_e)			
Literature (see below)	%	26%	26%
C) Hydraulic Gradient (i)			
Field Tested Values	no units	0.06	0.06
Seepage velocity		Field Tested K	Literature K
($V = (K)(i) / p_e$)			
Upper Value	m/year	5.90	0
Lower Value	m/year	5.90	0

Notes:

1. Obtain known literature values for K or p if possible (eg Leonard for Melbourne, hydrogeological maps); otherwise use the tables below for an estimate or see the next tab.
2. Obtain hydraulic gradient from groundwater contour elevations. If field data is not available estimate from a literature reference.

A) Ranges for Hydraulic Conductivity
SEE NEXT TAB FOR MORE VALUES

Lithology type	Low K (m/day)	High K (m/day)	Low K (m/sec)	High K (m/sec)
loam soils (surface)	0.1	1	1.16E-06	1.16E-05
Clay soils (surface)	0.01	0.2	1.16E-07	2.31E-06
Deep clay beds	1.00E-08	1.00E-02	1.16E-13	1.16E-07
Fine grained sand	1	5	1.16E-05	5.79E-05
Medium grained sand	5	20	5.79E-05	2.31E-04
Coarse grained sand	20	100	2.31E-04	1.16E-03
Gravel	100	1000	1.16E-03	1.16E-02
Gravel and sand mix	5	100	5.79E-05	1.16E-03
Clay, sand, and gravel mix	0.001	0.1	1.16E-08	1.16E-06

Reference from previous report used
Domenico and Schwartz 1990
Siltstone

Source: Bouwer, H. 1978. Groundwater Hydrology & Freeze & Cherry. 1979. Groundwater

NOTE: *For sedimentary & crystalline rocks (Domenico and Schwartz 1990) see website:*
http://www.aquifertest.com/forum/properties.htm

B) Ranges for Effective Porosity, Specific Yield, and Drainage Porosity
SEE TAB FOR MORE VALUES

Material	*Effective Porosity (%), Pe*	
	Range	Arthimetic Mean
Sandstone (fine)	2 - 40	21
Sandstone (medium)	12 - 41	27
Siltstone	1 - 33	12
Sand (fine)	1 - 46	33
Sand (medium)	16 - 46	32
Sand (coarse)	18 - 43	30
Gravel (fine)	13 - 40	28
Gravel (medium)	17 - 44	24
Gravel (coarse)	13 - 25	21
Silt	1 - 39	20
Clay	1 - 18	6
Limestone	0 - 36	14
Schist	22 - 33	26

Source: McWorther & Sunada (1977)

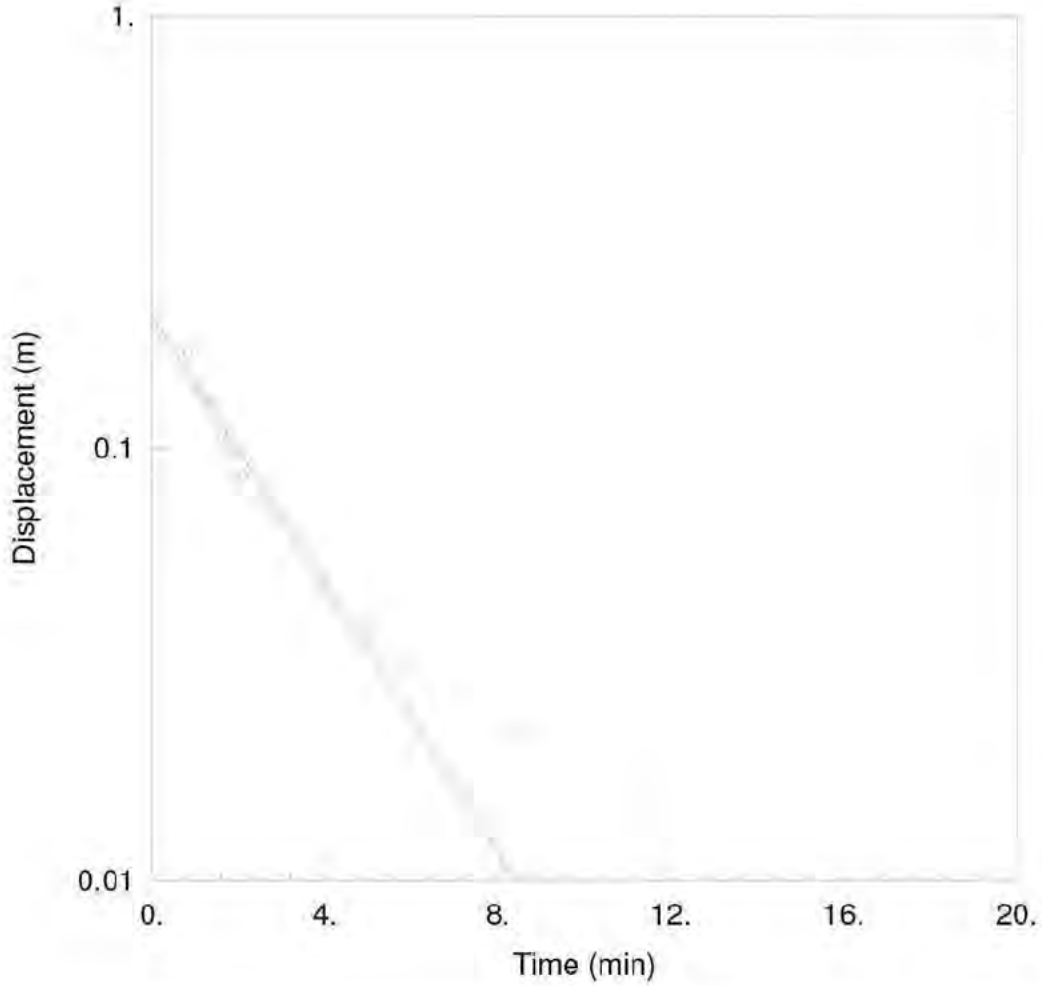
	Specific Yield in Percent		
Material	Minimum	Maximum	Average
Clay	0	5	2
Sandy Clay	3	12	7
Silt	3	19	18
Fine Sand	10	28	21
Medium Sand	15	32	26
Coarse Sand	20	35	27
Gravelly Sand	20	35	25
Fine Gravel	21	35	25
Medium Gravel	13	26	23
Coarse Gravel	12	26	22

Source: Johnson (1967)

	Lab Derived Values for Drainage Porosity (%)		
Material	Minimum	Maximum	Mean
Silt	4.3	29.1	13.9
Fine Sand	1.1	40.2	18.7
Medium Sand	6.7	38.5	25.6
Coarse Sand	12.1	28.2	18
Gravelly Sand	8.9	19.7	14

Source: Brady & Kunkel

NOTE: *For sedimentary & crystalline rocks (Domenico and Schwartz 1990) see specific yields on website below:*
http://www.aquifertest.com/forum/properties.htm



WELL TEST ANALYSIS

Data Set: J:\SYD\43218537\5 WIP\1. Q3 Sites\8. Calwell\4. Slug Test\MW02_FallingHead_Con.aqt
Date: 09/30/15 Time: 14:17:40

PROJECT INFORMATION

Company: URS Australia Pty Ltd
Client: Caltex Australia Pty Ltd
Project: 43218537
Location: Caltex Calwell
Test Well: MW02
Test Date: 31/08/2015

AQUIFER DATA

Saturated Thickness: 8.987 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW02)

Initial Displacement: 0.167 m
Total Well Penetration Depth: 8.987 m
Casing Radius: 0.025 m
Static Water Column Height: 8.987 m
Screen Length: 8.987 m
Well Radius: 0.057 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.07001 m/day
y0 = 0.2027 m

URS

APPENDIX G GROUNDWATER ANALYTICAL REPORTS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5630 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Caltex	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE:		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes / No / N/A
PROJECT: 43218537 Caltex 22176 PROJECT NO.: 43218537	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER: PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Stephen Randall CONTACT PH: Sch 2.2(a)(ii)		CF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: DDT + AA SAMPLER MOBILE:			
COC Emailed to ALS? (YES / NO) EDD FORMAT (or default):			
Email Reports to (will default to PM if no other addresses are listed): Sch 2.2(a)(ii) @ws.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
AA + DD	Frank ALS		Elkanah 14:10
DATE/TIME: 930 4/9/15	DATE/TIME: 4/9/15 1550	DATE/TIME:	DATE/TIME: 07/09/15

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TPH / BTEXN	PAH						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	22176_MW01_150831	31/08/15 11:55	W	AG, VS	6	x	x						Extra Vol. for MS
2	22176_MW03_150831	31/08/15 14:00	W	"	3	x	x						
3	22176_MW02_150831	31/08/15 14:20	W	"	6	x	x						Extra Vol. for LD
4	22176_QC100_150831	31/08/15	W	"	3	x	x						
*	22176_QC200_150831	31/08/15	W	"	3	x	x						Forward to Eurofins
5	22176_QC300_150831	31/08/15	W	"	3	x	x						
	~~22176_[illegible]_150831~~	~~31/08/15~~	~~W~~	~~"~~	2	x							
6	TB - 22176	31/08/15	W		1	x							
				TOTAL	37	25	6						

Environmental Division
Sydney
Work Order Reference
ES1530349

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com.au web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**URS Australia Pty Ltd Syd**
Contact name:	Stephen Randall
Project name:	CALWOOD 22176
Project ID:	43218537
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 7, 2015 2:10 PM
Eurofins | mgt reference:	**471578**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 3.4 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail Sch 2.2(a)(ii) @eurofins.com.au

Results will be delivered electronically via e.mail to Stephen Randall - Sch 2.2(a)(ii) @urs.com.

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com.au web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	URS Australia Pty Ltd Syd	**Order No.:**		**Received:**	Sep 7, 2015 2:10 PM
Address:	Level 4, 407 Pacific Highway Artarmon NSW 2064	**Report #:**	471578	**Due:**	Sep 14, 2015
		Phone:	02 8925 5500	**Priority:**	5 Day
		Fax:		**Contact Name:**	Stephen Randall
Project Name:	CALWOOD 22176				
Project ID:	43218537				

Eurofins | mgt Client Manager: Andrew Black

Sample Detail					Polycyclic Aromatic Hydrocarbons	BTEX	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217					X	X	X
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
22176_QC200_150831	Aug 31, 2015		Water	S15-Se08300	X	X	X

eurofins | mgt

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

URS Australia Pty Ltd
Level 4, 407 Pacific Highway
Artarmon
NSW 2064

Attention: **Stephen Randall**

Report **471578-W**
Project name CALWOOD 22176
Project ID 43218537
Received Date Sep 07, 2015

Client Sample ID			**22176_QC200_150831**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**S15-Se08300**
Date Sampled			**Aug 31, 2015**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	17
TRH C10-C14	0.05	mg/L	0.72
TRH C15-C28	0.1	mg/L	0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	0.82
BTEX			
Benzene	0.001	mg/L	9.7
Toluene	0.001	mg/L	< 0.1
Ethylbenzene	0.001	mg/L	0.29
m&p-Xylenes	0.002	mg/L	0.51
o-Xylene	0.001	mg/L	< 0.1
Xylenes - Total	0.003	mg/L	0.51
4-Bromofluorobenzene (surr.)	1	%	98
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.02	mg/L	< 0.1
TRH C6-C10	0.02	mg/L	17
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	6.5
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.39
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	0.076
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001

Client Sample ID			22176_QC200_150831
Sample Matrix			Water
Eurofins | mgt Sample No.			S15-Se08300
Date Sampled			Aug 31, 2015
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Total PAH*	0.001	mg/L	0.08
2-Fluorobiphenyl (surr.)	1	%	122
p-Terphenyl-d14 (surr.)	1	%	129
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	0.05	mg/L	0.39
TRH >C16-C34	0.1	mg/L	0.1
TRH >C34-C40	0.1	mg/L	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 10, 2015	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 08, 2015	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 10, 2015	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Sydney	Sep 08, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 10, 2015	7 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			

Company Name:	URS Australia Pty Ltd Syd	**Order No.:**		**Received:**	Sep 7, 2015 2:10 PM
Address:	Level 4, 407 Pacific Highway Artarmon NSW 2064	**Report #:**	471578	**Due:**	Sep 14, 2015
		Phone:	02 8925 5500	**Priority:**	5 Day
		Fax:		**Contact Name:**	Stephen Randall
Project Name:	CALWOOD 22176				
Project ID:	43218537				

Eurofins | mgt Client Manager: Andrew Black

Sample Detail					Polycyclic Aromatic Hydrocarbons	BTEX	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217					X	X	X
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
22176_QC200_150831	Aug 31, 2015		Water	S15-Se08300	X	X	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

**NOTE: pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.02			0.02	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	95			70-130	Pass	
TRH C10-C14	%	92			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	100			70-130	Pass	
Toluene	%	102			70-130	Pass	
Ethylbenzene	%	103			70-130	Pass	
m&p-Xylenes	%	99			70-130	Pass	
o-Xylene	%	98			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	107			70-130	Pass	
TRH C6-C10	%	105			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	94			70-130	Pass	
Acenaphthylene	%	102			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	100			70-130	Pass	
Benzo(a)pyrene	%	90			70-130	Pass	
Benzo(b&j)fluoranthene	%	96			70-130	Pass	
Benzo(g.h.i)perylene	%	89			70-130	Pass	
Benzo(k)fluoranthene	%	94			70-130	Pass	
Chrysene	%	93			70-130	Pass	
Dibenz(a.h)anthracene	%	88			70-130	Pass	
Fluoranthene	%	92			70-130	Pass	
Fluorene	%	96			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	90			70-130	Pass	
Naphthalene	%	82			70-130	Pass	
Phenanthrene	%	100			70-130	Pass	
Pyrene	%	96			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	91			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S15-Se08467	NCP	%	91			70-130	Pass	
TRH C10-C14	S15-Se02658	NCP	%	90			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S15-Se08467	NCP	%	104			70-130	Pass	
Toluene	S15-Se08467	NCP	%	107			70-130	Pass	
Ethylbenzene	S15-Se08467	NCP	%	107			70-130	Pass	
m&p-Xylenes	S15-Se08467	NCP	%	103			70-130	Pass	
o-Xylene	S15-Se08467	NCP	%	102			70-130	Pass	
Xylenes - Total	S15-Se08467	NCP	%	103			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S15-Se08467	NCP	%	102			70-130	Pass	
TRH C6-C10	S15-Se08467	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S15-Se02658	NCP	%	87			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S15-Se08466	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S15-Se04094	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S15-Se04094	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S15-Se04094	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S15-Se08466	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S15-Se08466	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S15-Se08466	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S15-Se08466	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S15-Se08466	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S15-Se08466	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S15-Se08466	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10	S15-Se08466	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S15-Se04094	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S15-Se04094	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S15-Se04094	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Andrew Black	Analytical Services Manager
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

Sch 2.2(a)(ii)

National Laboratory Manager

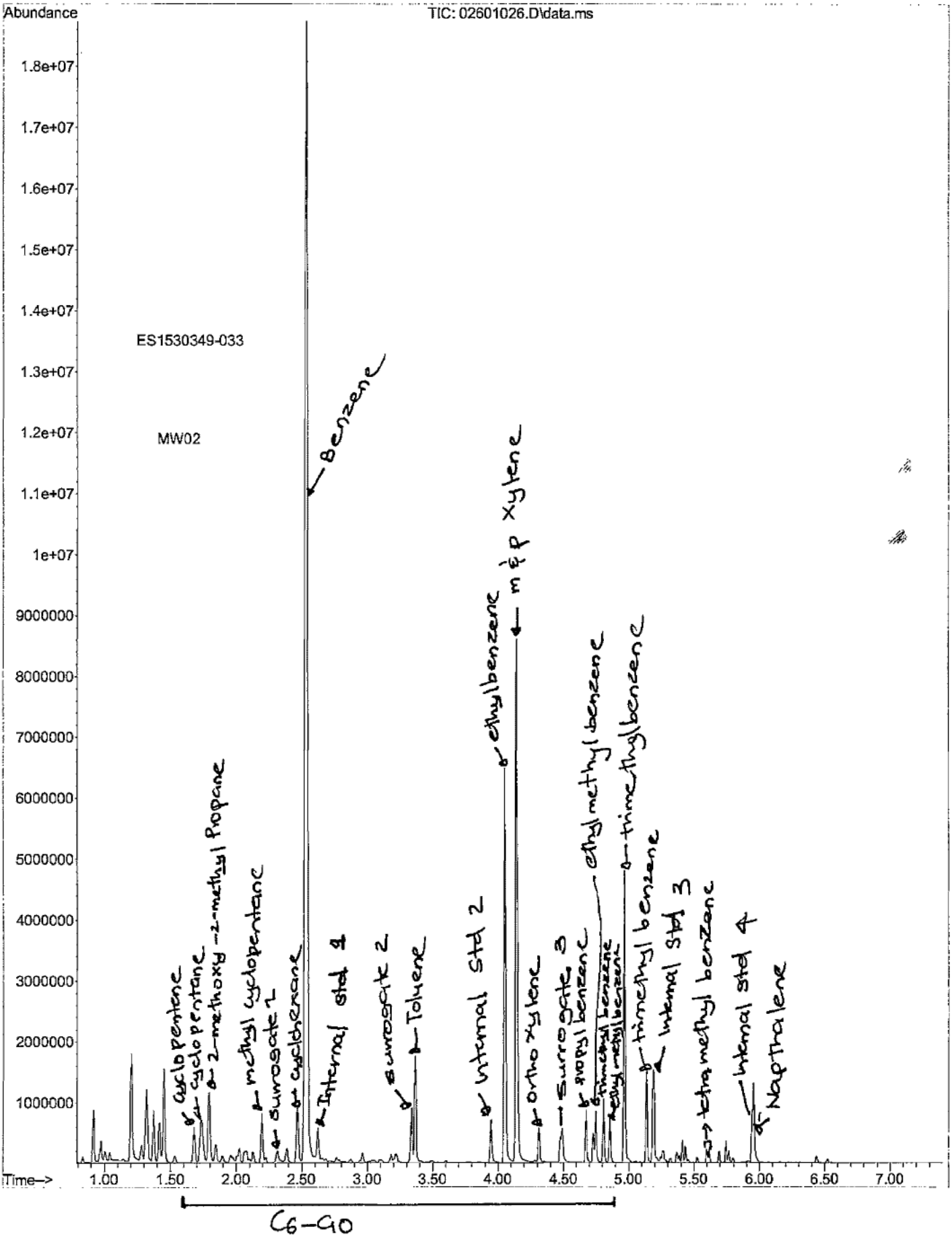
Final report - this Report replaces any previously issued Report

- Indicates Not Requested

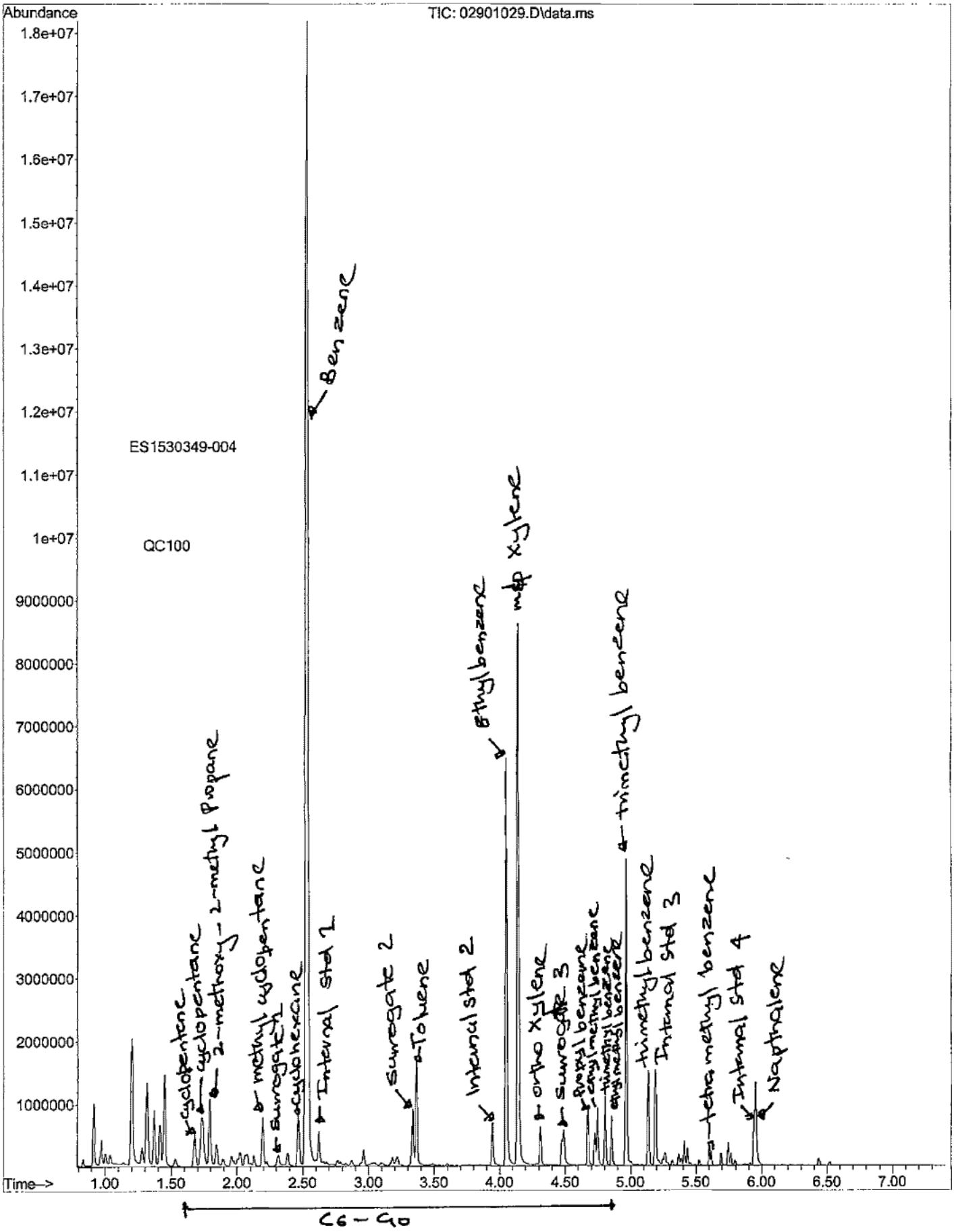
* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

File :I:\ENVIROSY\ORGANICS\DATA\SYV11\15-09-09\02601026.D
Operator :
Acquired : 9 Sep 2015 3:21 pm using AcqMethod VOCSCAN.M
Instrument : SYV11
Sample Name: 527648 09
Misc Info : ES1530349-3
Vial Number: 26



File :I:\ENVIROSY\ORGANICS\DATA\SYV11\15-09-09\02901029.D
Operator :
Acquired : 9 Sep 2015 4:27 pm using AcqMethod VOCSCAN.M
Instrument : SYV11
Sample Name: 527648 10
Misc Info : ES0349-4
Vial Number: 29



ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1530349**	Page	: 1 of 6
Client	: **URS AUSTRALIA (NSW) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN RANDALL	Contact	: Loren Schiavon
Address	: Supplier ID number - 1179447 Level 8, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: Sch 2.2(a)(ii) @urs.com	E-mail	: Sch 2.2(a)(ii) @alsglobal.com
Telephone	: +61 02 8925 5500	Telephone	: +61 2 8784 8503
Facsimile	: +61 02 8925 5555	Facsimile	: +61-2-8784 8500
Project	: 43218537 CALWEEL 22176	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 43218557	Date Samples Received	: 04-Sep-2015 15:50
C-O-C number	: ----	Date Analysis Commenced	: 08-Sep-2015
Sampler	: ANNA ANDRZEJEWSKI, DANIEL DAR TATEOSSIAN	Issue Date	: 11-Sep-2015 12:53
Site	: ----		
		No. of samples received	: 6
Quote number	: ----	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

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.

Signatories	*Position*	*Accreditation Category*
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthakesone	Laboratory Manager - Organics	Sydney Organics

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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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
ø = ALS is not NATA accredited for these tests.

- EP080: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	22176_MW01_150831	22176_MW03_150831	22176_MW02_150831	22176_QC100_150831	22176_QC300_150831
				Client sampling date / time	31-Aug-2015 11:55	31-Aug-2015 14:00	31-Aug-2015 14:20	[31-Aug-2015]	[31-Aug-2015]
Compound	CAS Number	LOR	Unit		ES1530349-001	ES1530349-002	ES1530349-003	ES1530349-004	ES1530349-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		<1.0	<1.0	**35.7**	**31.0**	<1.0
Acenaphthylene	208-96-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1	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	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	**35.7**	**31.0**	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		**50**	<20	**9220**	**8620**	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	**650**	**540**	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	**650**	**540**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		**50**	<20	**9230**	**8640**	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		**50**	<20	<1000	<1000	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	**390**	**330**	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	**390**	**330**	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	**320**	**250**	<100

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	22176_MW01_150831	22176_MW03_150831	22176_MW02_150831	22176_QC100_150831	22176_QC300_150831
				Client sampling date / time	31-Aug-2015 11:55	31-Aug-2015 14:00	31-Aug-2015 14:20	[31-Aug-2015]	[31-Aug-2015]
Compound	CAS Number	LOR	Unit		ES1530349-001	ES1530349-002	ES1530349-003	ES1530349-004	ES1530349-005
					Result	Result	Result	Result	Result
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	7810	7620	<1
Toluene	108-88-3	2	µg/L		<2	<2	88	83	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	282	275	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	484	485	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<50	<50	<2
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	484	485	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	8660	8460	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	72	76	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		10.8	25.5	26.2	20.2	24.7
2-Chlorophenol-D4	93951-73-6	1	%		25.1	52.0	49.5	38.9	55.9
2.4.6-Tribromophenol	118-79-6	1	%		42.0	50.5	54.9	53.3	51.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		64.8	79.6	76.8	65.0	72.8
Anthracene-d10	1719-06-8	1	%		60.0	61.1	65.8	63.9	61.3
4-Terphenyl-d14	1718-51-0	1	%		71.6	71.3	75.6	73.2	69.2
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		94.2	83.4	86.4	87.2	86.3
Toluene-D8	2037-26-5	2	%		110	104	102	99.4	98.7
4-Bromofluorobenzene	460-00-4	2	%		108	95.8	106	104	95.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB_22176	----	----	----	----
				Client sampling date / time	[31-Aug-2015]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1530349-006	--------	--------	--------	--------
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		----	----	----	----	----
Acenaphthylene	208-96-8	1	µg/L		----	----	----	----	----
Acenaphthene	83-32-9	1	µg/L		----	----	----	----	----
Fluorene	86-73-7	1	µg/L		----	----	----	----	----
Phenanthrene	85-01-8	1	µg/L		----	----	----	----	----
Anthracene	120-12-7	1	µg/L		----	----	----	----	----
Fluoranthene	206-44-0	1	µg/L		----	----	----	----	----
Pyrene	129-00-0	1	µg/L		----	----	----	----	----
Benz(a)anthracene	56-55-3	1	µg/L		----	----	----	----	----
Chrysene	218-01-9	1	µg/L		----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1	µg/L		----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L		----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1	µg/L		----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1	µg/L		----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		----	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		----	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L		----	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		----	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	----	----	----	----
EP080: BTEXN									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB_22176	----	----	----	----
				Client sampling date / time	[31-Aug-2015]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1530349-006	--------	--------	--------	--------
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
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	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1	%		----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1	%		----	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		----	----	----	----	----
Anthracene-d10	1719-06-8	1	%		----	----	----	----	----
4-Terphenyl-d14	1718-51-0	1	%		----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		90.9	----	----	----	----
Toluene-D8	2037-26-5	2	%		101	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		99.3	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1530349**	Page	: 1 of 6
Client	: **URS AUSTRALIA (NSW) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN RANDALL	Contact	: Loren Schiavon
Address	: Supplier ID number - 1179447 Level 8, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: Sch 2.2(a)(ii) @urs.com	E-mail	: Sch 2.2(a)(ii) @alsglobal.com
Telephone	: +61 02 8925 5500	Telephone	: +61 2 8784 8503
Facsimile	: +61 02 8925 5555	Facsimile	: +61-2-8784 8500
Project	: 43218537 CALWEEL 22176	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 43218557	Date Samples Received	: 04-Sep-2015
C-O-C number	: ----	Date Analysis Commenced	: 08-Sep-2015
Sampler	: ANNA ANDRZEJEWSKI, DANIEL DAR TATEOSSIAN	Issue Date	: 11-Sep-2015
Site	: ----	No. of samples received	: 6
Quote number	: ----	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

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

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.

Signatories	*Position*	*Accreditation Category*
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthakesone	Laboratory Manager - Organics	Sydney Organics

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

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

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**

				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: 205456)									
ES1530349-003	22176_MW02_150831	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	35.7	35.9	0.502	0% - 20%
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 205455)									
ES1530349-003	22176_MW02_150831	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	650	610	5.79	0% - 50%
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 205865)									
ES1530349-001	22176_MW01_150831	EP080: C6 - C9 Fraction	----	20	µg/L	50	50	0.00	No Limit
ES1530352-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	40500	41000	1.45	0% - 20%
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 205455)									
ES1530349-003	22176_MW02_150831	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	390	390	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 205865)									
ES1530349-001	22176_MW01_150831	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	50	50	0.00	No Limit
ES1530352-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	41300	41700	1.09	0% - 20%
EP080: BTEXN (QC Lot: 205865)									
ES1530349-001	22176_MW01_150831	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit

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 (%)*
EP080: BTEXN (QC Lot: 205865) - continued									
ES1530349-001	22176_MW01_150831	EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES1530352-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	14300	14800	3.68	0% - 20%
		EP080: Ethylbenzene	100-41-4	2	µg/L	933	998	6.69	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	4220	4580	8.05	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	1750	1940	10.3	0% - 50%
		EP080: Toluene	108-88-3	2	µg/L	4870	5210	6.77	0% - 20%
		EP080: Naphthalene	91-20-3	5	µg/L	289	286	0.888	No Limit

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**

				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)B: Polynuclear Aromatic Hydrocarbons (QCLot: 205456)								
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	87.1	62	113
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	89.0	64	114
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	93.6	64	116
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	91.7	64	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	94.5	63	117
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	92.0	62	119
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	94.0	59	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	101	62	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	90.4	63	116
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	98.1	61	117
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	94.3	64	118
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	94.4	64	115
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	94.0	60	118
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	75.1	59	119
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	89.6	63	116
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	94.8	63	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 205455)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	97.8	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	95.9	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	91.6	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 205865)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	104	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 205455)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	94.2	59	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	93.4	74	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	98.1	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 205865)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	108	75	127
EP080: BTEXN (QCLot: 205865)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	91.5	70	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.6	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	94.6	69	121

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 205865) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	98.2	70	124
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	95.2	72	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	97.2	65	129

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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 205456)							
ES1530349-001	22176_MW01_150831	EP075(SIM): Acenaphthene	83-32-9	2 µg/L	78.4	70	130
		EP075(SIM): Pyrene	129-00-0	2 µg/L	85.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 205455)							
ES1530349-001	22176_MW01_150831	EP071: C10 - C14 Fraction	----	2000 µg/L	95.2	74	150
		EP071: C15 - C28 Fraction	----	2500 µg/L	95.0	77	153
		EP071: C29 - C36 Fraction	----	2000 µg/L	96.5	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 205865)							
ES1530349-001	22176_MW01_150831	EP080: C6 - C9 Fraction	----	325 µg/L	101	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 205455)							
ES1530349-001	22176_MW01_150831	EP071: >C10 - C16 Fraction	>C10_C16	2500 µg/L	104	74	150
		EP071: >C16 - C34 Fraction	----	3500 µg/L	102	77	153
		EP071: >C34 - C40 Fraction	----	1500 µg/L	98.0	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 205865)							
ES1530349-001	22176_MW01_150831	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	102	70	130
EP080: BTEXN (QCLot: 205865)							
ES1530349-001	22176_MW01_150831	EP080: Benzene	71-43-2	25 µg/L	70.3	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	87.5	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	84.9	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	93.6	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	88.6	70	130
		EP080: Toluene	108-88-3	25 µg/L	80.6	70	130

ALS Environmental

QA/QC Compliance Assessment for DQO Reporting

Work Order	: **ES1530349**	Page	: 1 of 4
Client	: **URS AUSTRALIA (NSW) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN RANDALL	Telephone	: +61 2 8784 8503
Project	: 43218537 CALWEEL 22176	Date Samples Received	: 04-Sep-2015
Site	: ----	Issue Date	: 11-Sep-2015
Sampler	: ANNA ANDRZEJEWSKI, DANIEL DAR TATEOSSIAN	No. of samples received	: 6
Order number	: 43218557	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Glass Bottle - Unpreserved 22176_MW01_150831, 22176_MW03_150831, 22176_MW02_150831, 22176_QC100_150831, 22176_QC300_150831	08-Sep-2015	07-Sep-2015	1	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved 22176_MW01_150831, 22176_MW03_150831, 22176_MW02_150831, 22176_QC100_150831, 22176_QC300_150831	08-Sep-2015	07-Sep-2015	1	----	----	----

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) 22176_MW01_150831, 22176_MW03_150831, 22176_MW02_150831, 22176_QC100_150831, 22176_QC300_150831	31-Aug-2015	08-Sep-2015	07-Sep-2015	×	08-Sep-2015	18-Oct-2015	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) 22176_MW01_150831, 22176_MW03_150831, 22176_MW02_150831, 22176_QC100_150831, 22176_QC300_150831	31-Aug-2015	08-Sep-2015	07-Sep-2015	×	08-Sep-2015	18-Oct-2015	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) 22176_MW01_150831, 22176_MW03_150831, 22176_MW02_150831, 22176_QC100_150831, 22176_QC300_150831, TB_22176	31-Aug-2015	09-Sep-2015	14-Sep-2015	✓	09-Sep-2015	14-Sep-2015	✓

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(were) 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)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and 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
TRH - 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 the QC requirements of NEPM (2013) Schedule B(3)
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 (2013) Schedule B(3)
TRH 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. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES1530349**		
Client	: **URS AUSTRALIA (NSW) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN RANDALL	Contact	: Loren Schiavon
Address	: Supplier ID number - 1179447 LEVEL 4, 407 PACIFIC HIGHWAY ARTARMON NSW, AUSTRALIA 2064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: Sch 2.2(a)(ii) @urs.com	E-mail	: Sch 2.2(a)(ii) @alsglobal.com
Telephone	: +61 02 8925 5500	Telephone	: +61 2 8784 8503
Facsimile	: +61 02 8925 5555	Facsimile	: +61-2-8784 8500
Project	: 43218537 CALWEEL 22176	Page	: 1 of 3
Order number	: ----	Quote number	: ES2014URSNSW0291 (EN/001/14)
C-O-C number	: ----	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
Sampler	: ANNA ANDRZEJEWSKI, DANIEL DAR TATEOSSIAN		

Dates

Date Samples Received	: 04-Sep-2015 3:50 PM	Issue Date	: 05-Sep-2015
Client Requested Due Date	: 11-Sep-2015	Scheduled Reporting Date	: **11-Sep-2015**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 1.8'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample '22176_QC200_150831' forwarded to Eurofins as per CoC.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

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.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-07 TRH/BTEXN/PAH	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1530349-001	31-Aug-2015 11:55	22176_MW01_150831	✓	
ES1530349-002	31-Aug-2015 14:00	22176_MW03_150831	✓	
ES1530349-003	31-Aug-2015 14:20	22176_MW02_150831	✓	
ES1530349-004	[31-Aug-2015]	22176_QC100_150831	✓	
ES1530349-005	[31-Aug-2015]	22176_QC300_150831	✓	
ES1530349-006	[31-Aug-2015]	TB_22176		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	APAC.ap@urs.com
ALL RESULTS		
- *AU Certificate of Analysis - NATA (COA)	Email	NSW.Geoscience.Analytical@urs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	NSW.Geoscience.Analytical@urs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	NSW.Geoscience.Analytical@urs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	NSW.Geoscience.Analytical@urs.com
- Chain of Custody (CoC) (COC)	Email	NSW.Geoscience.Analytical@urs.com
- EDI Format - ENMRG (ENMRG)	Email	NSW.Geoscience.Analytical@urs.com
- EDI Format - MRED (MRED)	Email	NSW.Geoscience.Analytical@urs.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	NSW.Geoscience.Analytical@urs.com
EQUIS RESULTS		
- EDI Format - EQUIS V5 URS (EQUIS_V5_URS)	Email	AUSNZLab@urs.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	AUSNZLab@urs.com
STEPHEN RANDALL		
- *AU Certificate of Analysis - NATA (COA)	Email	stephen.randall@urs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	stephen.randall@urs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	stephen.randall@urs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	stephen.randall@urs.com
- Chain of Custody (CoC) (COC)	Email	stephen.randall@urs.com
- EDI Format - ENMRG (ENMRG)	Email	stephen.randall@urs.com
- EDI Format - EQUIS V5 URS (EQUIS_V5_URS)	Email	stephen.randall@urs.com
- EDI Format - ESDAT (ESDAT)	Email	stephen.randall@urs.com
- EDI Format - MRED (MRED)	Email	stephen.randall@urs.com

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townesville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Caltex	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE:		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes / No / N/A
PROJECT: ~~43218537~~ Caldwell 22176	PROJECT NO.: ~~43218537~~	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle): COC: 1 2 3 4 5 6 7; OF: 1 2 3 4 5 6 7
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
PROJECT MANAGER: Stephen Randall	CONTACT PH: Sch 2.2(a)(ii)		Random Sample Temperature on Receipt: °C
SAMPLER: DDT + AA	SAMPLER MOBILE		Other comment:
COC Emailed to ALS? (YES / (NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Sch 2.2(a)(ii) @ws.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
AA + DD	Frank ALS		
DATE/TIME: 930 4/9/15	DATE/TIME: 4/9/15 1550	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

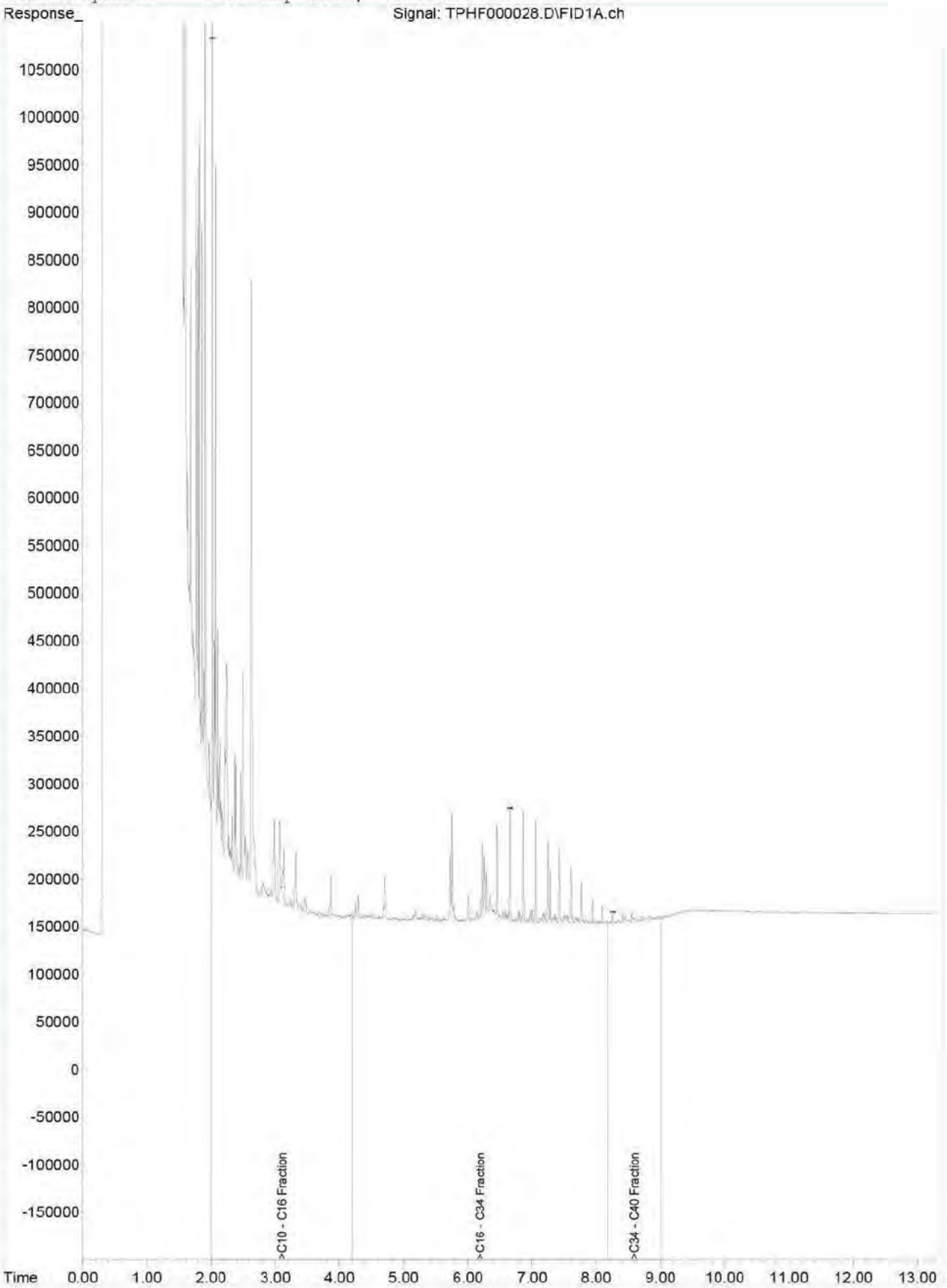
ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TPH / BTEXN	PAH							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	22176_MW01_150831	31/08/15 11:55	W	AG, VS	6	x	x							Extra Vol. for MS
2	22176_MW03_150831	31/08/15 14:00	W	11	3	x	x							
3	22176_MW02_150831	31/08/15 1420	W	11	6	x	x							Extra Vol. for LD
4	22176_QC100_150831	31/08/15	W	11	3	x	x							
*	22176_QC200_150831	31/08/15	W	11	3	x	x							Forward to Eurofins
5	22176_QC300_150831	31/08/15	W	11	3	x	x							
	~~22176_Triplicate_150831~~	~~31/08/15~~	~~W~~		2	x								
6	TB - 22176	31/08/15	W		1	x								
				TOTAL	~~4~~ 25	7	6							

Environmental Division
Sydney
Work Order Reference
ES1530349

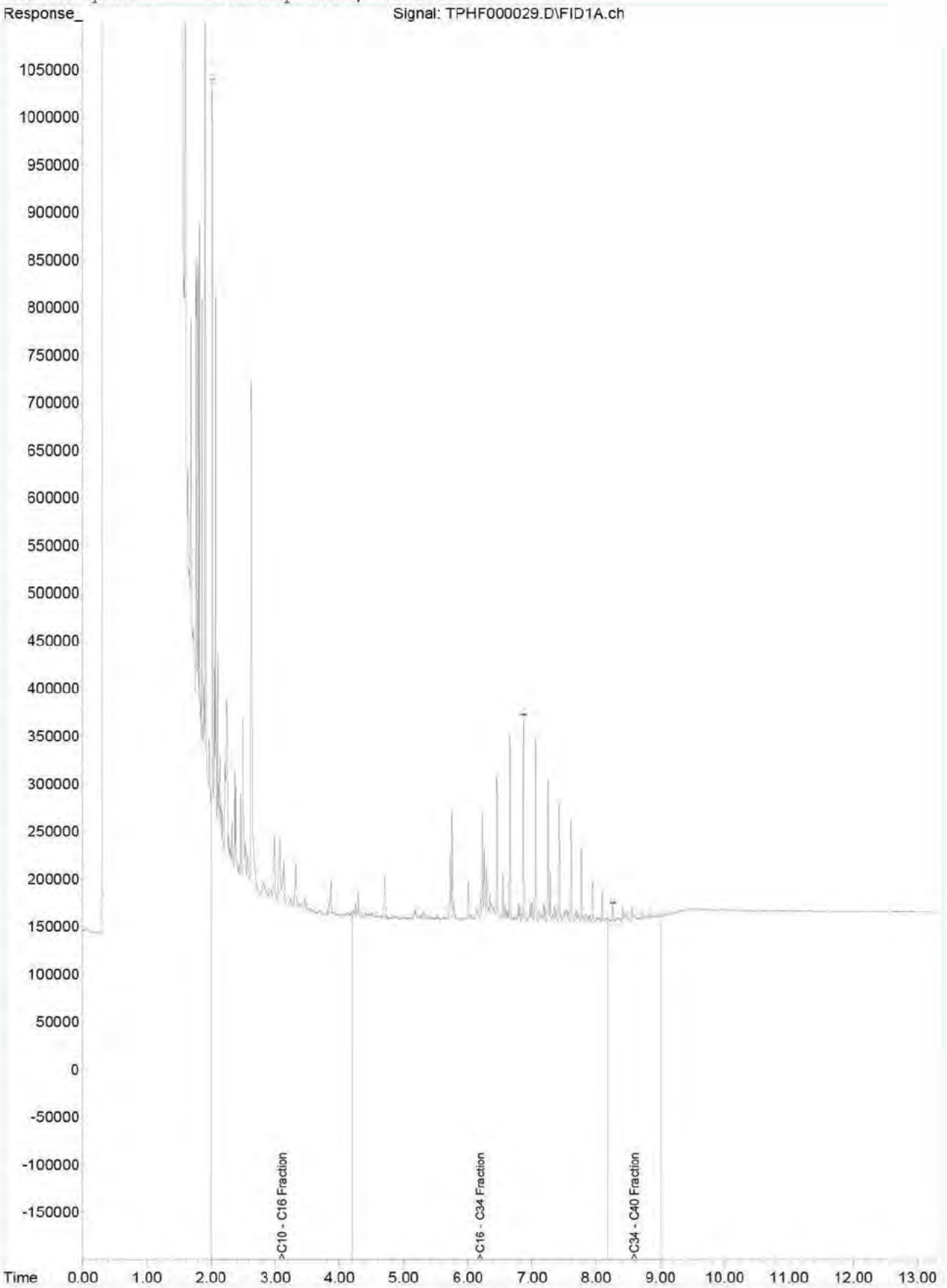
Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

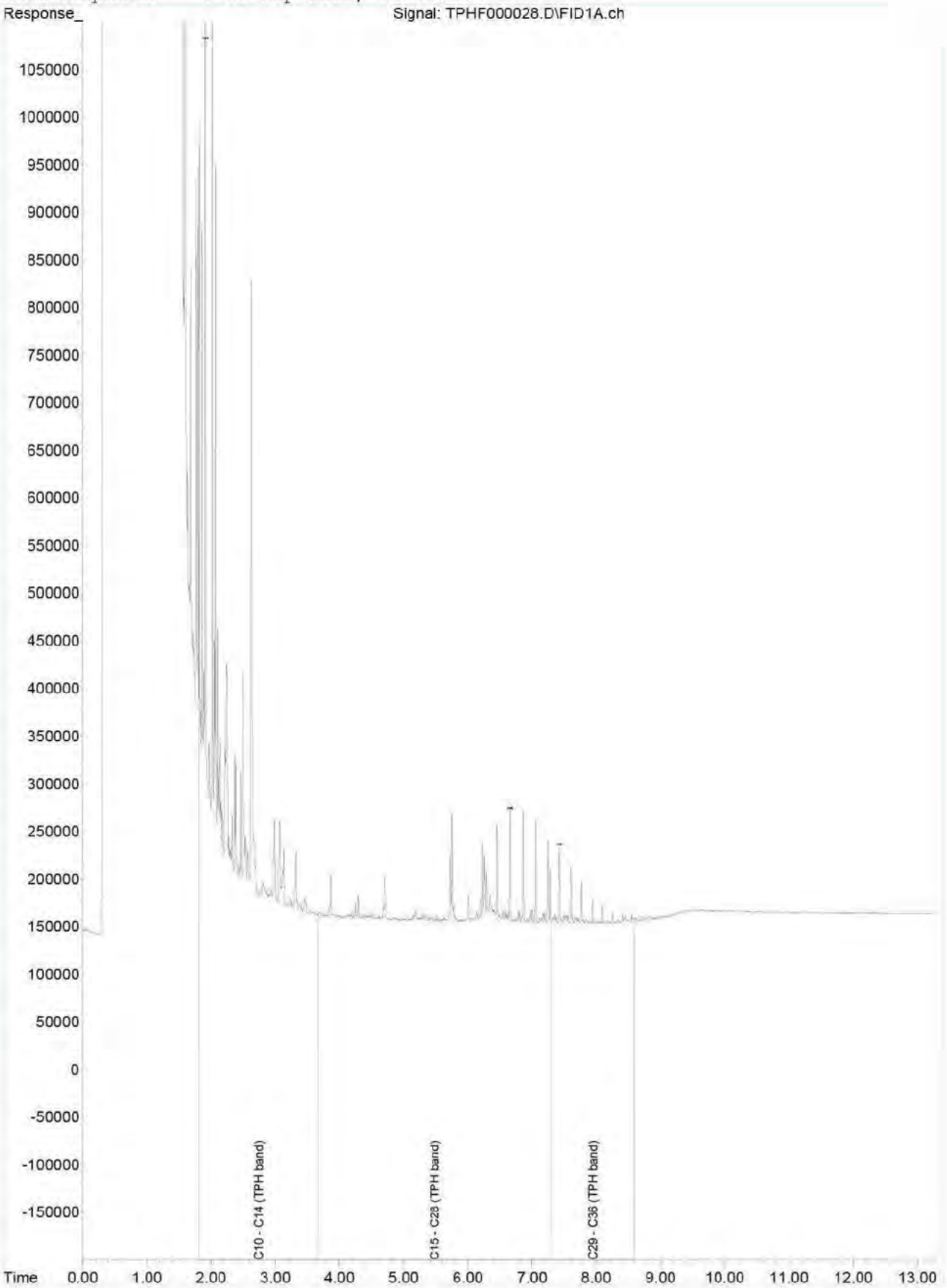
Fraction Scheme : NEPM Fractions
Data File : TPHF000028.D
Laboratory Number: ES1530349-003
Sample ID : 22176_MW02_150831
Date Acquired : 08-Sep-2015, 18:08:50



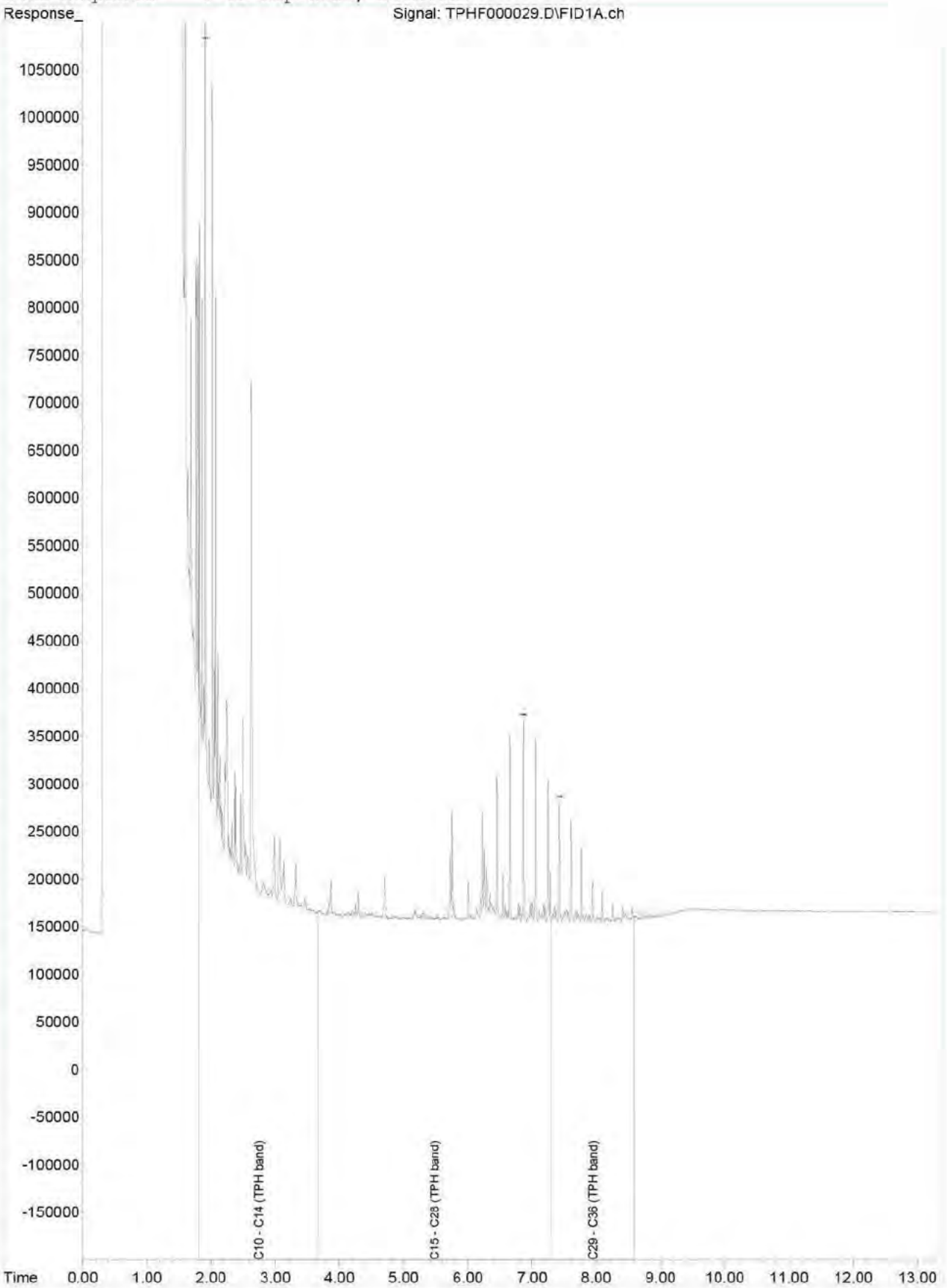
Fraction Scheme : NEPM Fractions
Data File : TPHF000029.D
Laboratory Number: ES1530349-004
Sample ID : 22176_QC100_150831
Date Acquired : 08-Sep-2015, 18:27:20



Fraction Scheme : TPH Fractions
Data File : TPHF000028.D
Laboratory Number: ES1530349-003
Sample ID : 22176_MW02_150831
Date Acquired : 08-Sep-2015, 18:08:50



Fraction Scheme : TPH Fractions
Data File : TPHF000029.D
Laboratory Number: ES1530349-004
Sample ID : 22176_QC100_150831
Date Acquired : 08-Sep-2015, 18:27:20



URS

APPENDIX H CALIBRATION RECORDS

URS GOVERNMENT OIL & GAS INFRASTRUCTURE POWER INDUSTRIAL

URS is a leading provider of engineering, construction, technical and environmental services for public agencies and private sector companies around the world. We offer a full range of program management; planning, design and engineering; systems engineering and technical assistance; construction and construction management; operations and maintenance; and decommissioning and closure services for power, infrastructure, industrial and commercial, and government projects and programs.

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