Current Groundwater Field Parameters
Cnr Dunheved Rd & Henry Lawson Dr, Werrington 2747
Caltex 2016 GMP

Site ID	Site Name	Well ID	Date Gauged	Depth to Water (mbTOC)	Total Depth (mbTOC)	Depth to LNAPL (mbTOC)	Comment
28569	WERRINGTON	MW01	1/04/2016 14:51	1.86	5.96	-	-
28569	WERRINGTON	MW02	1/04/2016 14:43	2.001	9.93	-	-
28569	WERRINGTON	MW03	1/04/2016 14:37	1.857	9.9	Sheen	-
28569	WERRINGTON	MW04	1/04/2016 14:29	1.658	7.9	-	-

HC - Hydrocarbon
HS - Hydrasleeve
RDO - Rugged Dissolved Oxygen
SWL - standing water level

mbTOC - metres below top of casing
NR - not recorded
WQM - Water Quality Meter

Current Groundwater Field Parameters
Cnr Dunheved Rd & Henry Lawson Dr, Werrington 2747
Caltex 2016 GMP

Site ID	Site Name	Well ID	Date	Time	DO (mg/L)	E.C. (µS/cm)	pH	Redox (mV)	Temp ºC	Comment Odour, Colour, Turbidity,	Field Parameters Exsitu	Grab Sample
28569	WERRINGTON	MW01	7/04/2016	12:20	0.22	38026.9	6.03	52.9	22.46	No odour, clear/light brown, no to low turbidity	N	N
28569	WERRINGTON	MW02	7/04/2016	11:45	0.19	241.3	6.98	-116.2	25.52	No odour, clear/grey, low to moderate turbidity	N	N
28569	WERRINGTON	MW03	7/04/2016	11:55	0.19	30883	6.46	-151.3	21.36	Strong HC odour, clear/grey, low turbidity, possible sheen	N	N
28569	WERRINGTON	MW04	7/04/2016	12:35	0.17	29182.3	5.95	45.5	22.75	No odour, clear/light brown, low turbidity	N	N

HC - Hydrocarbon
HS - Hydrasleeve
RDO - Rugged Dissolved Oxygen
SWL - standing water level

mbTOC - metres below top of casing
NR - not recorded
WQM - Water Quality Meter

Groundwater Analytical Results
Werrington 28569
Cnr Dunheved Rd & Henry
Lawson Dr, Werrington 2747
Caltex 2016 GMP

						Well ID	MW01	MW02	MW03	MW04
						Field ID	28569_MW01_07/04/16	28569_MW02_07/04/16	28569_MW03_07/04/16	28569_MW04_07/04/16
						Date	7/04/2016	7/04/2016	7/04/2016	7/04/2016
						Lab Report Number	EM1604003	EM1604003	EM1604003	EM1604003
Analyte	**Unit**	**LOR**	ANZECC 2000 - Maintenance of Ecosystems Freshwater 95%	NHMRC 2015 - Australian Drinking Water Health	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Sand 2-4m					
Total Recoverable Hydrocarbons										
C6-C10 fraction	µg/L	20				<20	<20	**4380**	**30**
C6-C10 fraction (minus BTEX)(F1)	µg/L	20			6000	<20	<20	**940**	**30**
>C10-C16 fraction	µg/L	100				<100	<100	**1810**	<100
>C10-C16 (minus Naphthalene)(F2)	µg/L	100			NL	<100	<100	**1690**	<100
>C16-C34 fraction	µg/L	100				<100	**350**	**250**	<100
>C34-C40 fraction	µg/L	100				<100	<100	<100	<100
>C10-C40 fraction (sum)	µg/L	100				<100	**350**	**2060**	<100
Monocyclic Aromatic Hydrocarbons									
Benzene	µg/L	1	950	1	5000	<1	<1	**1430**	<1
Toluene	µg/L	2		800	NL	<2	<2	**995**	<2
Ethylbenzene	µg/L	2		300	NL	<2	<2	**209**	<2
m&p-Xylene	µg/L	2				<2	<2	**530**	<2
o-Xylene	µg/L	2	350			<2	<2	**271**	<2
Total Xylenes	µg/L	2	350	600	NL	<2	<2	**801**	<2
Total BTEX	µg/L	1				<1	<1	**3440**	<1
Naphthalene									
Naphthalene (VOC)	µg/L	5	16		NL	<5	<5	**116**	<5

*Shallowest depth to groundwater on site is <2 mBTOC

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1607999**	Page	: 1 of 4
Client	: **AECOM SERVICES PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: MS CATHERINE HART	Contact	: Bronwyn Sheen
Address	: LEVEL 6, 1 SOUTHBANK BOULEVARD SOUTHBANK VIC, AUSTRALIA 3006	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 8699 7500	Telephone	: +61-3-8549 9636
Project	: 60489900	Date Samples Received	: 11-Apr-2016 09:20
Order number	: 60489900.3.2	Date Analysis Commenced	: 07-Jul-2016
C-O-C number	: ----	Issue Date	: 07-Jul-2016 17:27
Sampler	: ----		
Site	: Caltex GMP		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

NATA Accredited Laboratory 825
Accredited for compliance with ISO/IEC 17025.

NATA
WORLD RECOGNISED ACCREDITATION

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
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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.
~ = Indicates an estimated value.

- EP080: Particular sample (EM1607999_038) shows positive hit of C6-C9/C6-C10 band. Confirmed by re-analysis.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	28569_MW01_07/04/16	28569_MW02_07/04/16	28569_MW03_07/04/16	28569_MW04_07/04/16	----
			Client sampling date / time	[07-Apr-2016]	[07-Apr-2016]	[07-Apr-2016]	[07-Apr-2016]	----
Compound	CAS Number	LOR	Unit	EM1607999-035	EM1607999-036	EM1607999-037	EM1607999-038	--------
				Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	4320	30	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	3230	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	280	320	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	140	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	420	3550	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	4380	30	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	940	30	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	1810	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	350	250	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	350	2060	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	1690	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	1430	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	995	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	209	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	530	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	271	<2	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	801	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	3440	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	116	<5	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	100	103	100	103	----
Toluene-D8	2037-26-5	2	%	94.5	96.5	99.1	109	----
4-Bromofluorobenzene	460-00-4	2	%	102	105	113	127	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129