

# **APPENDIX B**

## **Photographs**



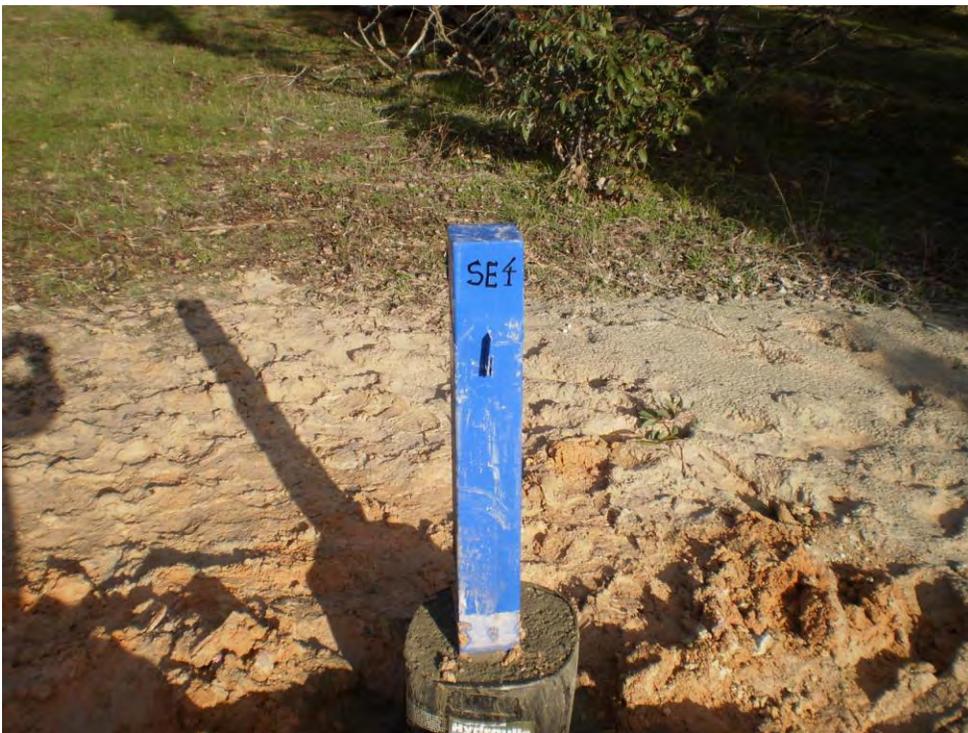
Drilling at depth showing dry conditions



Bore logging



1 m interval sample record showing water intersected at the last 4 samples (46 m below the surface)



Finished bore - example

# **APPENDIX C**

## **Water Quality Summaries**

	SE1	SE2	SE3	SE4	SE5	SE6	SE7	SE8	SE9	NG2	RPD
Jul-13											
Chloride	1100	1600	4200	310	1600	1700	3700	53	120	1800	11.8
Conductivity (at 25	3600	5200	12000	1100	4900	5400	9900	520	910	5200	5.9
pH	3.7	4.6	4.2	6	5	4.8	4	7.2	5.1	4.7	6.2
Sulphate (as S)	45	87	220	17	71	94	59	13	85	89	22.5
Total Dissolved Sol	1900	3000	7300	600	2800	3100	5400	360	650	3100	10.2
Alkali Metals											
Calcium	2.2	11	5.7	2.2	4.3	5.7	6	< 0.5	< 0.5	11	87.6
Magnesium	42	140	350	15	130	68	180	0.8	4.2	150	14.3
Potassium	8	36	56	3.7	25	9.6	6.4	5	3.9	34	30.5
Sodium	610	750	1800	160	690	940	1700	120	200	760	9.7
Heavy Metals											
Arsenic (filtered)	0.001	< 0.001	0.004	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	0
Cadmium (filtered)	0.0003	0.0007	0.019	< 0.0002	0.015	0.0013	< 0.0002	< 0.0002	0.0002	0.0007	182.2
Chromium (filtered)	0.001	< 0.001	0.002	< 0.001	< 0.001	0.002	0.003	< 0.001	0.001	< 0.001	0
Copper (filtered)	0.37	0.22	1.1	0.011	0.18	0.065	0.12	0.002	0.004	0.23	24.4
Lead (filtered)	0.074	0.024	0.085	< 0.001	0.012	0.008	0.011	< 0.001	< 0.001	0.023	62.9
Manganese (filtere	0.081	0.7	0.64	0.03	1.7	0.18	0.041	< 0.005	< 0.005	0.73	79.8
Mercury (filtered)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0
Nickel (filtered)	0.096	0.37	2.1	0.014	0.9	0.084	0.049	0.001	0.001	0.38	81.3
Zinc (filtered)	0.12	0.52	1.4	0.056	0.73	0.15	0.038	0.007	0.019	0.54	29.9
Total Nitrogen Set (as N)											
Nitrate & Nitrite (a	0.07	< 0.05	< 0.05	5.3	< 0.05	0.17	1.6	8.6	7.2	< 0.05	0
Total Kjeldahl Nitro	0.7	0.7	0.4	0.4	< 0.2	< 0.2	< 0.2	0.9	0.9	0.2	0
Total Nitrogen (as	0.8	0.7	0.4	5.7	< 0.2	< 0.2	1.6	9.5	8.1	0.2	0

	SE1	SE2	SE3	SE4	SE5	SE6	SE7	SE8	SE9	NG2	RPD
4-Oct-13											
Chloride	1000	2000	4100	99	1400	2300	3300	39	88	88	0.0
Conductivity (at 25Â°C)	3300	6100	11000	430	4300	7400	9000	480	790	770	2.6
pH	3.3	4.6	3.7	5.7	4.7	4.2	3.6	6.7	4.9	4.8	2.1
Sulphate (as S)	45	110	230	< 5	75	120	52	18	85	86	1.2
Total Dissolved Solids	1900	3400	7000	240	2600	3700	4800	320	560	560	0.0
Alkali Metals											
Calcium	1.3	10	5	1.1	5	2.6	5.7	< 0.5	< 0.5	< 0.5	
Magnesium	43	170	370	11	110	110	170	0.8	2.7	2.7	0.0
Potassium	3.1	38	62	1.5	21	12	6.4	3.3	2.1	2.1	0.0
Sodium	570	890	1900	71	640	1300	1700	130	57	160	94.9
Heavy Metals											
Arsenic (filtered)	< 0.001	0.002	0.003	< 0.001	< 0.001	0.001	0.002	< 0.001	< 0.001	< 0.001	
Cadmium (filtered)	0.0004	0.0007	0.022	< 0.0002	0.0026	0.0003	0.0002	< 0.0002	< 0.0002	< 0.0002	
Chromium (filtered)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	66.7
Copper (filtered)	0.39	0.1	0.52	0.006	0.079	0.091	0.14	0.001	0.005	0.004	22.2
Lead (filtered)	0.083	0.021	0.076	< 0.001	0.006	0.012	0.006	< 0.001	< 0.001	< 0.001	
Manganese (filtered)	0.08	0.95	0.79	0.019	1.5	0.057	0.12	< 0.005	< 0.005	< 0.005	
Mercury (filtered)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Nickel (filtered)	0.064	0.45	1.4	0.011	0.46	0.02	0.013	< 0.001	0.001	0.001	0.0
Zinc (filtered)	0.077	0.5	1.3	0.031	0.51	0.047	0.025	0.004	0.012	0.008	40.0
Total Nitrogen Set (as N)											
Nitrate & Nitrite (as N)	< 0.05	0.08	0.07	5.7	0.06	0.1	1.6	6.2	6.1	6.1	0.0
Total Kjeldahl Nitrogen (as N)	0.8	< 0.2	< 0.2	< 0.2	0.2	< 0.2	0.9	1.6	< 0.2	< 0.2	
Total Nitrogen (as N)	0.8	< 0.2	< 0.2	5.7	0.26	< 0.2	2.5	7.8	6.1	6.1	0.0

	SE1	SE2	SE3	SE4	SE5	SE6	SE7	SE8	SE9	NG2	RPD
Mar-14											
Chloride	1100	4200	2400	130	3200	2600	4100	160	98	130	28.1
Conductivity (at 25Â	3400	13000	7300	400	9800	8200	11000	630	790	890	11.9
pH	3.6	4.1	3.4	5.8	5.2	4.5	3.7	6.5	5.3	5.3	0
Sulphate (as S)	47	190	160	< 5	140	120	62	17	69	65	6
Total Dissolved Solid	1900	7200	4000	240	5500	4600	6000	420	530	580	9
Alkali Metals											
Calcium	< 5	16	5.8	< 5	7.4	< 5	5.4	< 5	< 5	< 5	0
Magnesium	42	310	240	11	170	110	190	< 5	< 5	< 5	0
Potassium	< 5	43	47	< 5	26	7.7	< 5	< 5	< 5	< 5	0
Sodium	630	2100	1200	69	1800	1500	2200	140	170	190	11.1
Heavy Metals											
Arsenic (filtered)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0
Cadmium (filtered)	0.0003	0.0021	0.022	< 0.0002	0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0
Chromium (filtered)	< 0.001	0.002	0.001	< 0.001	0.001	0.004	0.003	< 0.001	< 0.001	0.001	0
Copper (filtered)	0.39	1.2	0.15	0.004	0.043	0.062	0.096	0.002	0.004	0.004	0
Lead (filtered)	0.09	0.47	0.043	< 0.001	0.011	0.013	0.01	< 0.001	< 0.001	< 0.001	0
Manganese (filtered)	0.12	1.1	1.1	0.014	1.3	0.042	0.13	< 0.005	0.015	0.026	0
Mercury (filtered)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0
Nickel (filtered)	0.096	1	2.6	0.008	0.31	0.017	0.04	< 0.001	0.002	0.003	40
Zinc (filtered)	0.14	0.92	2.6	0.022	0.35	0.057	0.086	0.006	0.032	0.039	19.7
Total Nitrogen Set (as N)											
Nitrate & Nitrite (as	< 0.05	0.06	2.1	7.2	0.06	0.12	0.82	7.8	7.9	7.8	1.3
Total Kjeldahl Nitrog	< 0.2	< 0.2	< 0.2	0.7	< 0.2	< 0.2	< 0.2	0.8	0.6	0.8	0
Total Nitrogen (as N)	< 0.2	< 0.2	2.1	7.9	< 0.2	< 0.2	0.8	8.6	8.5	8.6	1.2

	SE1	SE2	SE3	SE4	SE5	SE6	SE7	SE8	SE9	NG2	RPD
17-Jul-14											
Chloride	1000	4400	2900	160	1100	2800	3900	220	58	110	61.9
Conductivity (at 25Â°C)	3900	14000	11000	680	3900	9300	12000	1100	730	710	2.8
pH	3.6	3.7	2.9	5.1	5.1	4.2	3.7	5.6	5.3	6	12.4
Sulphate (as S)	41	180	150	7.3	52	100	58	11	66	9.9	147.8
Total Dissolved Solids	1800	7300	4900	330	1800	4300	5800	520	450	360	22.2
Alkali Metals											
Calcium	1.1	21	4.9	0.8	2.9	2.8	6.7	< 0.5	< 0.5	< 0.5	0.0
Magnesium	39	390	310	12	74	130	200	2.1	2.1	2.1	0.0
Potassium	2.6	52	69	1.4	18	9.5	6.2	2.4	1.7	2.3	0.0
Sodium	620	2100	1400	99	590	1600	2100	100	120	110	8.7
Heavy Metals											
Arsenic (filtered)	< 0.001	< 0.005	< 0.005	< 0.001	< 0.001	0.001	< 0.005	< 0.001	< 0.001	< 0.001	0.0
Cadmium (filtered)	0.0003	0.0018	0.039	< 0.0002	0.001	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002	0.0
Chromium (filtered)	< 0.001	< 0.005	< 0.005	< 0.001	< 0.001	0.003	< 0.005	< 0.001	< 0.001	< 0.001	0.0
Copper (filtered)	0.35	1.6	0.051	0.01	0.008	0.057	0.097	0.006	0.004	0.003	28.6
Lead (filtered)	0.086	0.61	0.11	< 0.001	< 0.001	0.015	< 0.025	< 0.001	< 0.001	< 0.001	0.0
Manganese (filtered)	0.069	1.1	1.4	0.015	1.6	0.044	0.095	0.008	< 0.005	< 0.005	0.0
Mercury (filtered)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0
Nickel (filtered)	0.069	1.1	4.2	0.011	0.44	0.02	0.047	0.004	0.001	0.002	66.7
Zinc (filtered)	0.077	0.91	3.8	0.02	0.39	0.04	0.074	0.009	0.013	0.006	73.7
Total Nitrogen Set (as N)											
Nitrate & Nitrite (as N)	< 0.05	0.06	0.27	7.4	0.12	0.2	0.91	7	7.9	7.1	10.7
Total Kjeldahl Nitrogen (as N)	< 0.2	3.8	3	3.6	2.8	2.9	9.4	0.3	3.5	3.2	9.0
Total Nitrogen (as N)	< 0.2	3.9	3.3	11	2.9	3.1	10	7.3	11	10	9.5

	SE1	SE2	SE3	SE4	SE5	SE6	SE7	SE8	SE9	NG2	RPD
12-Sep-14											
Chloride	1000	4800	2900	100	910	2800	3900	48	59	58	1.7
Conductivity (at 25Â°C)	3700	14000	9400	440	3300	8700	12000	400	700	700	0.0
pH	3.5	3.8	3.4	6.1	5.9	4.3	3.7	7.1	7.4	5.9	22.6
Sulphate (as S)	41	240	190	5.6	44	110	60	12	66	67	1.5
Total Dissolved Solids	1900	9000	5100	260	1800	4500	6800	270	490	480	2.1
Alkali Metals											
Calcium	1.1	25	3.7	0.9	1.7	2.2	5.5	< 0.5	< 0.5	< 0.5	0.0
Magnesium	40	420	300	9.9	70	100	100	1.3	1.8	1.9	0.0
Potassium	2.8	53	66	1.5	17	11	7.2	2.3	1.9	1.8	0.0
Sodium	550	2100	1200	70	470	1500	1800	81	130	130	0.0
Heavy Metals											
Arsenic (filtered)	0.001	0.002	0.004	< 0.001	< 0.001	0.001	0.002	< 0.001	< 0.001	< 0.001	0.0
Cadmium (filtered)	0.0003	0.0019	0.027	< 0.0002	0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0
Chromium (filtered)	0.001	0.004	< 0.001	< 0.001	< 0.001	0.005	0.002	< 0.001	< 0.001	< 0.001	0.0
Copper (filtered)	0.46	1.8	0.01	0.013	0.003	0.085	0.093	0.002	0.007	0.007	0.0
Lead (filtered)	0.096	0.66	0.1	< 0.001	< 0.001	0.014	0.003	< 0.001	< 0.001	< 0.001	0.0
Manganese (filtered)	0.093	1.2	1.8	0.017	1.6	0.055	0.1	< 0.005	< 0.005	< 0.005	0.0
Mercury (filtered)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0
Nickel (filtered)	0.098	1.2	3.8	0.014	0.49	0.029	0.046	< 0.001	0.003	0.003	0.0
Zinc (filtered)	0.1	0.91	3.2	0.024	0.38	0.052	0.058	0.004	0.038	0.039	2.6
Total Nitrogen Set (as N)											
Nitrate & Nitrite (as N)	< 0.05	< 0.05	< 0.05	7.7	< 0.05	0.13	0.98	5.7	7.5	8	6.5
Total Kjeldahl Nitrogen (as N)	< 0.2	0.3	< 0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2	0.2	< 0.2	0.0
Total Nitrogen (as N)	< 0.2	0.3	< 0.2	8	< 0.2	< 0.2	1	5.7	7.7	8	3.8

# **APPENDIX D**

## **Chain of Custody and Laboratory Certificates**





PO Box 11  
 Kalamunda, WA 6926  
 Ph (08) 63635276  
 Fx (08) 94547615

# CHAIN OF CUSTODY & ANALYSIS REQUEST

LAB ADDRESS  
 ARL  
 LAB CONTACT  
 PHONE

PROJECT #		PROJECT NAME		ANALYSIS REQUIRED & METHOD CODE										PRELIM. RESULTS BY:											
OV02		Opalvale CHITTY															<input type="checkbox"/> VERBAL								
COLLECTORS NAME			LAB JOB #			SAMPLING DATE	No. OF CONTAINERS	PHENOL SP.	TPH	BTEX (PURGE & TRAP)	CO3 HCO3	PAH	Total Nitrogen	Na, Ca, K, Mg	NO3, NH4 scan	As, Cd, Cr, Cu, Mn, Ni, Pb, Zn	FILTER prior to testing	pH	Conductivity (mS/m)	TDS (mg/l)	andre@stass.com.au		<input type="checkbox"/> FAX		
AWS																					FINAL REPORT BY:		<input checked="" type="checkbox"/> EMAIL		
SAMPLE ID	DEPTH (metres)	LAB #	MATRIX		PRESERVATION METHOD																REMARKS				
DISCRETE SAMPLE REQUEST:			WATER	SOIL	SWAB	SLUDGE	ICE	ACIDIFIED	OTHER	NONE															
SE1			*				*						*			*	*	*	*	*	email results to				
SE2			*				*						*			*	*	*	*	*	<a href="mailto:andre@stass.com.au">andre@stass.com.au</a>				
SE3			*				*						*			*	*	*	*	*					
SE4			*				*						*			*	*	*	*	*					
SE5			*				*						*			*	*	*	*	*					
COMPOSITE SAMPLE REQUEST:																									
Relinquished by:			Date	Time	Received by:			Date	Time	Custody Seals Intact? Yes / No										Additional Comments:					
Andre Stasikowski										Samples Received Chilled? Yes / No															
Relinquished by:			Date	Time	Received by:			Date	Time											Queries to Andre at 6363 5276					



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# CHAIN OF CUSTODY & ANALYSIS REQUEST

LAB MGT LabMark  
 ADDRESS  
 LAB CONTACT Natalie  
 PHONE

PROJECT #		PROJECT NAME		ANALYSIS REQUIRED & METHOD CODE										PRELIM. RESULTS BY:						
OV03		Opalvale CHITTY		SAMPLING DATE	No. OF CONTAINERS	PHENOL SP.	TPH	BTEX (PURGE & TRAP)	CO3 HCO3	PAH	Total Nitrogen	Na, Ca, K, Mg	Cl, SO4 scan	As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn	FILTER prior to testing	pH	Conductivity (mS/m)	TDS (mg/l)	<input type="checkbox"/> VERBAL	
COLLECTORS NAME		LAB JOB #																	<input type="checkbox"/> FAX	
Nolan Grobler																			<input checked="" type="checkbox"/> EMAIL	
SAMPLE ID	DEPTH (metres)	LAB #	MATRIX				PRESERVATION METHOD				FINAL REPORT BY:									
			WATER	SOIL	SWAB	SLUDGE	ICE	ACIDIFIED	OTHER	NONE	LAB QUOTE REF:									
DISCRETE SAMPLE REQUEST:			REMARKS																	
SE1			*				*					*	*	*	*	*	*	*	email results to	
SE2			*				*					*	*	*	*	*	*	*	andre@stass.com.au	
SE3			*				*					*	*	*	*	*	*	*		
SE4			*				*					*	*	*	*	*	*	*		
NG3			*				*					*	*	*	*	*	*	*		
COMPOSITE SAMPLE REQUEST:																				
Relinquished by:			Date	Time	Received by:				Date	Time	Custody Seals Intact? Yes / No				Additional Comments:					
Nolan Grobler											Samples Received Chilled? Yes / No									
Relinquished by:			Date	Time	Received by:				Date	Time					Queries to Andre at 6363 5276					



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# CHAIN OF CUSTODY & ANALYSIS REQUEST

LAB ADDRESS  
LAB CONTACT Natalie  
PHONE

MGT LabMark

VIA WA

PROJECT # OV04 PROJECT NAME Opalvale CHITTY

COLLECTORS NAME Nolan Grobler LAB JOB #

SAMPLE ID	DEPTH (metres)	LAB #	MATRIX				PRESERVATION METHOD		
			WATER	SOIL	SWAB	SLUDGE	ICE	ACIDIFIED	OTHER

DISCRETE SAMPLE REQUEST:

SAMPLING DATE	No. OF CONTAINERS	PHENOL SP.	TPH	BTEX (PURGE & TRAP)	CO3 HCO3	PAH	Total Nitrogen	Na, Ca, K, Mg	Cl, SO4	As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn	FILTER prior to testing	pH	Conductivity (mS/m)	TDS (mg/l)	ANALYSIS REQUIRED & METHOD CODE	
															scan	
6-Aug-12	1								*	*	*	*	*	*		
6-Aug-12	1								*	*	*	*	*	*		

COMPOSITE SAMPLE REQUEST:

Relinquished by:	Date	Time	Received by:	Date	Time	Custody Seals Intact?	Samples Received Chilled?	Additional Comments:
Nolan Grobler			<i>[Signature]</i>	6/18/12	3:00pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	# 347203
Relinquished by:	Date	Time	Received by:	Date	Time			Queries to Andre at 6363 5276





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# CHAIN OF CUSTODY & ANALYSIS REQUEST

LAB ADDRESS  
LAB CONTACT DAVE  
PHONE

MGT LabMark

Page 1 1 1

APP 500620

PROJECT # OY05 PROJECT NAME Opavale CHITTY

COLLECTORS NAME Nolan Grobler

LAB JOB # 402563

## ANALYSIS REQUIRED & METHOD CODE

PRELIM RESULTS BY: andie@stass.com.au

FINAL REPORT BY: andie@stass.com.au

VERBAL  FAX  EMAIL

SAMPLE ID

DEPTH (metres)

LAB #

DISCRETE SAMPLE REQUEST

WATER

SOIL

SWAB

SLUDGE

ICE

ACIDIFIED

OTHER

NONE

MATRIX

PRESERVATION METHOD

SAMPLING DATE

No. OF CONTAINERS

PHENOL SP.

TPH

BTEX (PURGE & TRAP)

CO3 HCO3

PAH

Total Nitrogen

Na, Ca, K, Mg

Cl, SO<sub>4</sub> scan

As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn

FILTER prior to testing

pH

Conductivity (mS/m)

TDS (mg/l)

LAB QUOTE REF:

REMARKS

email results to andie@stass.com.au

## COMPOSITE SAMPLE REQUEST:

Sample ID	Depth (metres)	Lab #	Matrix	Preservation Method	Sampling Date	No. of Containers	Phenol Sp.	TPH	BTEX (Purge & Trap)	CO3 HCO3	PAH	Total Nitrogen	Na, Ca, K, Mg	Cl, SO <sub>4</sub> scan	As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn	Filter prior to testing	pH	Conductivity (mS/m)	TDS (mg/l)	Additional Comments:	
SE1					4-Oct-13	3															
SE2					4-Oct-13	3															
SE3					4-Oct-13	3															
SE4					4-Oct-13	3															
SE5					4-Oct-13	3															
SE6					4-Oct-13	3															
SE7					4-Oct-13	3															
SE8					4-Oct-13	3															
SE9					4-Oct-13	3															
NG2					4-Oct-13	3															

Requisitioned by: Nolan Grobler

Date

Time

Received by: Tom W





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# CHAIN OF CUSTODY & ANALYSIS REQUEST

LAB ADDRESS  
LAB CONTACT Dave  
MGT Eurofims  
PHONE

MP 000792

PROJECT # OV06 PROJECT NAME Opalvale CHITTY  
COLLECTORS NAME Nolan Grobler LAB JOB #

SAMPLE ID	DEPTH (metres)	LAB #	MATRIX				PRESERVATION METHOD			SAMPLING DATE	No. OF CONTAINERS	PHENOL SP.	TPH	BTEX (PURGE & TRAP)	CO3 HCO3	PAH	Total Nitrogen	Na, Ca, K, Mg	Cl, SO <sub>4</sub>	As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn	FILTER prior to testing	pH	Conductivity (mS/m)	TDS (mg/l)	REMARKS
			WATER	SOIL	SWAB	SLUDGE	ICE	ACIDIFIED	OTHER																
SE1			*							17-Jun-14	3					*	*	*	*	*	*	*	*		email results to andre@stass.com.au
SE2			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
SE3			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
SE4			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
SE5			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
SE6			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
SE7			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
SE8			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
SE9			*							17-Jun-14	3					*	*	*	*	*	*	*	*		
NG2			*							17-Jun-14	3					*	*	*	*	*	*	*	*		

COMPOSITE SAMPLE REQUEST:

Received by:	Date	Time	Received by:	Date	Time	Custody Seals Intact?	Samples Received Chilled?	Yes / No	Additional Comments:
Catherine Efling	18/6/14	3:38				Yes	Yes	No	Queries to Andre at 6363 5276

Relinquished by: Nolan Grobler  
Relinquished by: [Signature]  
Date: [Blank]  
Time: [Blank]  
Received by: [Blank]  
Date: [Blank]  
Time: [Blank]  
Custody Seals Intact? Yes / No  
Samples Received Chilled? Yes / No  
Additional Comments: Queries to Andre at 6363 5276

422159

Chain of Custody

PRELIM. RESULTS BY:  VERBAL  FAX  EMAIL  
andree@stass.com.au  
FINAL REPORT BY:

LAB QUOTE REF: [Blank]  
REMARKS



PO Box 11  
Kalamunda, WA 6926  
Ph (08) 63635276  
Fx (08) 94547615

# CHAIN OF CUSTODY & ANALYSIS REQUEST

LAB MGT Eurofinns  
ADDRESS  
LAB CONTACT Dave  
PHONE

PROJECT #		PROJECT NAME										ANALYSIS REQUIRED & METHOD CODE													PRELIM. RESULTS BY:					
OV06		Opalvale CHITTY																							<input type="checkbox"/> VERBAL <input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL					
COLLECTORS NAME			LAB JOB #										SAMPLING DATE	No. OF CONTAINERS	PHENOL SP.	TPH	BTEX (PURGE & TRAP)	CO3 HCO3	PAH	Total Nitrogen	Na, Ca, K, Mg	Cl, SO4	As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn	FILTER prior to testing	pH	Conductivity (mS/m)	TDS (mg/l)	FINAL REPORT BY:		
Nolan Grobler																												andre@stass.com.au		
SAMPLE ID	DEPTH (metres)	LAB #	MATRIX				PRESERVATION METHOD																					LAB QUOTE REF:		
DISCRETE SAMPLE REQUEST:			WATER	SOIL	SWAB	SLUDGE	ICE	ACIDIFIED	OTHER	NONE	REMARKS																			
SE1			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*	email results to andre@stass.com.au					
SE2			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
SE3			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
SE4			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
SE5			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
SE6			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
SE7			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
SE8			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
SE9			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
NG2			*				*				12-Sep-14	3				*	*	*	*	*	*	*	*	*						
COMPOSITE SAMPLE REQUEST:																														
Relinquished by:			Date	Time	Received by:			Date	Time	Custody Seals Intact?			Yes / No			Additional Comments:														
Nolan Grobler					Catherine Efling			15/9	8:32 am				Yes / No																	
Relinquished by:			Date	Time	Received by:			Date	Time	Samples Received Chilled?			Yes / No			Queries to Andre at 6363 5276														

432062

## LABORATORY REPORT

ARL Lab No: 11-4452  
Date: 25 July 2011

**CLIENT:** Stass Environmental  
PO Box 11  
KALAMUNDA WA 6926

**ATTENTION:** Andre Stasikowski

**SAMPLE DESCRIPTION:** Five water samples as received for analysis of conductivity, total nitrogen, pH, total dissolved solids and metals.

**DATE RECEIVED:** 06 July 2011

**LOCATION / JOB NO:** OV01 - Opalvale CHITTY

**PURCHASE ORDER:** NA

### METHOD REFERENCES:

pH in Water	ARL No. 014
Total Dissolved Solids in Water	ARL No. 017
Conductivity and Salinity in Water	ARL No. 019
Metals in Water	ARL No. 402, 403
Total Nitrogen	ARL No. 330



Kim Rodgers  
Laboratory Manager

**Metals Quality Control Data**

	<b>Matrix Spike</b>	<b>Certified Reference Material</b>
	<b>% Recovery</b>	
<b>Arsenic</b>	104%	122%
<b>Cadmium</b>	118%	114%
<b>Chromium</b>	89%	113%
<b>Copper</b>	94%	98%
<b>Manganese</b>	96%	97%
<b>Nickel</b>	98%	101%
<b>Lead</b>	104%	107%
<b>Zinc</b>	106%	101%

**Nutrients Quality Control Data**

	<b>Matrix Spike</b>	<b>Certified Reference Material</b>
	<b>% Recovery</b>	
<b>Total Nitrogen</b>	104%	108%

**Inorganics Quality Control Data**

	<b>Matrix Spike</b>	<b>Certified Reference Material</b>
	<b>% Recovery</b>	
<b>pH</b>	-	101%
<b>Conductivity</b>	-	105%
<b>Total Dissolved Solids</b>	-	97%

**Nutrients**

Date Prepared      6/07/2011  
Date Analysed     7/07/2011

ARL Lab No	Method Detection Limit	11-4452-1	11-4452-2	11-4452-3	11-4452-4	11-4452-5
Sample Marks		SE1	SE	SE3	SE4	SE5
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
<b>Total Nitrogen</b>	0.2	0.4	0.3	0.4	7.1	< 0.2

**Metals**

Date Prepared 7/07/2011  
 Date Analysed 8/07/2011, 14/07/2011

ARL Lab No	Method Detection Limit	11-4452-1	11-4452-2	11-4452-3	11-4452-4	11-4452-5
Sample Marks		SE1	SE	SE3	SE4	SE5
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
<b>Arsenic</b>	0.001	0.002	0.006	0.002	0.001	< 0.001
<b>Cadmium</b>	0.002	< 0.002	< 0.002	0.037	< 0.002	< 0.002
<b>Chromium</b>	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
<b>Copper</b>	0.01	0.45	0.30	4.4	0.01	0.01
<b>Manganese</b>	0.01	0.20	0.79	1.7	0.05	< 0.01
<b>Nickel</b>	0.01	0.17	0.48	3.4	0.01	< 0.01
<b>Lead</b>	0.01	0.06	0.02	0.03	< 0.01	< 0.01
<b>Zinc</b>	0.01	0.21	0.48	2.6	0.01	< 0.01

Stass Environmental  
 ARL Lab No: 11-4452  
 25 July 2011

ARL Lab No	Date Analysed	Units	Method Detection Limit	11-4452-1	11-4452-2	11-4452-3	11-4452-4	11-4452-5
Sample Marks				SE1	SE	SE3	SE4	SE5
pH	7/07/2011	#	-	4.4	4.9	4.3	6.4	7.5
Conductivity	7/07/2011	mS/cm	0.01	4.8	5.6	9.0	0.50	0.60
Total Dissolved Solids	7/07/2011	mg/l	5	2800	3500	5700	280	310



Environmental and Analytical Laboratory

**LABORATORY REPORT**

**Job Number:** 12-0379  
**Revision:** 00  
**Date:** 7 February 2012

**ADDRESS:** **Stass Environmental**  
PO Box 11  
Kalamunda WA 6926

**ATTENTION:** Andre Stasikowski

**DATE RECEIVED:** 18/01/2012

**YOUR REFERENCE:** OV02, Opalvale CHITTY

**PURCHASE ORDER:** N/A

**APPROVALS:**

Leigh Bermingham  
Chemist - Inorganics

**REPORT COMMENTS:**

Samples are analysed on an as received basis unless otherwise noted.

**METHOD REFERENCES:**

ARL No. 040	Arsenic by Hydride Atomic Absorption
ARL No. 402/403	Metals in Water by ICPOES/MS
ARL No. 313	NOx in Water by Discrete Analyser
ARL No. 330	Persulphate Method for Simultaneous Determination of TN & TP
ARL No. 014	pH in Water
ARL No. 019	Conductivity and Salinity in Water
ARL No. 017	Total Dissolved Solids (At 105°C)



WORLD RECOGNISED  
**ACCREDITATION**  
This document is issued in  
accordance with NATA's  
accreditation requirements  
Accreditation No. 2377

**LABORATORY REPORT**

Stass Environmental

ARL Job No: 12-0379

Revision: 00

Date: 7 February 2012

Metals in Water Sample No: Sample Description:	LOR	UNITS	12-0379-1 SE1	12-0379-2 SE2	12-0379-3 SE3	12-0379-4 SE4	12-0379-5 SE5
Arsenic - Dissolved	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium - Dissolved	0.002	mg/L	<0.002	0.005	0.038	<0.002	<0.002
Chromium - Dissolved	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Copper - Dissolved	0.01	mg/L	0.44	0.37	1.2	0.03	0.04
Manganese - Dissolved	0.01	mg/L	0.22	0.86	1.7	0.06	<0.01
Nickel - Dissolved	0.01	mg/L	0.19	0.64	2.7	0.01	<0.01
Lead - Dissolved	0.01	mg/L	0.12	0.07	0.22	<0.01	<0.01
Zinc - Dissolved	0.01	mg/L	0.24	0.72	2.5	0.07	<0.01

Nutrients in Water Sample No: Sample Description:	LOR	UNITS	12-0379-1 SE1	12-0379-2 SE2	12-0379-3 SE3	12-0379-4 SE4	12-0379-5 SE5
NOx-N	0.01	mg/L	<0.01	<0.01	<0.01	5.5	0.31
Total Nitrogen	0.2	mg/L	1.0	0.9	0.9	5.5	1.4

Misc. Inorganics in Water Sample No: Sample Description:	LOR	UNITS	12-0379-1 SE1	12-0379-2 SE2	12-0379-3 SE3	12-0379-4 SE4	12-0379-5 SE5
pH	0.1	pH units	3.6	4.1	3.9	6.2	8.3
Conductivity	0.01	mS/cm	4.1	5.6	7.7	0.48	0.85
Total Dissolved Solids	5	mg/L	2,400	4,000	5,800	300	480

**Result Definitions**

LOR Limit of Reporting

[NT] Not Tested

[ND] Not Detected at indicated Limit of Reporting

[NR] Analysis Not Requested

(SS) Surrogate Standard Compound

Stass Environmental  
PO BOX 11  
KALAMUNDA  
WA 6926

Attention: Andre Stasikowski

Report 387045-W  
Client Reference OPALVALE CHITTY OV04  
Received Date Jul 25, 2013

## 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.

Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SE1 Water M13-JI18356 Jul 24, 2013	SE2 Water M13-JI18357 Jul 24, 2013	SE3 Water M13-JI18358 Jul 24, 2013	SE4 Water M13-JI18359 Jul 24, 2013
Chloride	1	mg/L	1100	1600	4200	310
Conductivity (at 25°C)	10	uS/cm	3600	5200	12000	1100
pH	0.1	units	3.7	4.6	4.2	6.0
Sulphate (as S)	5	mg/L	45	87	220	17
Total Dissolved Solids	10	mg/L	1900	3000	7300	600
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	< 0.05	< 0.05	5.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.7	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	0.8	0.7	0.4	5.7
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	0.004	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0003	0.0007	0.019	< 0.0002
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Copper (filtered)	0.001	mg/L	0.37	0.22	1.1	0.011
Lead (filtered)	0.001	mg/L	0.074	0.024	0.085	< 0.001
Manganese (filtered)	0.005	mg/L	0.081	0.70	0.64	0.030
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.096	0.37	2.1	0.014
Zinc (filtered)	0.001	mg/L	0.12	0.52	1.4	0.056
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	2.2	11	5.7	2.2
Magnesium	0.5	mg/L	42	140	350	15
Potassium	0.5	mg/L	8.0	36	56	3.7
Sodium	0.5	mg/L	610	750	1800	160

Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SE5 Water M13-JI18360 Jul 24, 2013	SE6 Water M13-JI18361 Jul 24, 2013	SE7 Water M13-JI18362 Jul 24, 2013	SE8 Water M13-JI18363 Jul 24, 2013
Chloride	1	mg/L	1600	1700	3700	53

Client Sample ID			SE5	SE6	SE7	SE8
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M13-JI18360	M13-JI18361	M13-JI18362	M13-JI18363
Date Sampled			Jul 24, 2013	Jul 24, 2013	Jul 24, 2013	Jul 24, 2013
Test/Reference	LOR	Unit				
Conductivity (at 25°C)	10	uS/cm	4900	5400	9900	520
pH	0.1	units	5.0	4.8	4.0	7.2
Sulphate (as S)	5	mg/L	71	94	59	13
Total Dissolved Solids	10	mg/L	2800	3100	5400	360
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.17	1.6	8.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.9
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.6	9.5
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.015	0.0013	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	0.003	< 0.001
Copper (filtered)	0.001	mg/L	0.18	0.065	0.12	0.002
Lead (filtered)	0.001	mg/L	0.012	0.008	0.011	< 0.001
Manganese (filtered)	0.005	mg/L	1.7	0.18	0.041	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.90	0.084	0.049	0.001
Zinc (filtered)	0.001	mg/L	0.73	0.15	0.038	0.007
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	4.3	5.7	6.0	< 0.5
Magnesium	0.5	mg/L	130	68	180	0.8
Potassium	0.5	mg/L	25	9.6	6.4	5.0
Sodium	0.5	mg/L	690	940	1700	120

Client Sample ID			SE9	NG2
Sample Matrix			Water	Water
Eurofins   mgt Sample No.			M13-JI18364	M13-JI18365
Date Sampled			Jul 24, 2013	Jul 24, 2013
Test/Reference	LOR	Unit		
Chloride	1	mg/L	120	1800
Conductivity (at 25°C)	10	uS/cm	910	5200
pH	0.1	units	5.1	4.7
Sulphate (as S)	5	mg/L	85	89
Total Dissolved Solids	10	mg/L	650	3100
<b>Total Nitrogen Set (as N)</b>				
Nitrate & Nitrite (as N)	0.05	mg/L	7.2	< 0.05
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	0.2
Total Nitrogen (as N)	0.2	mg/L	8.1	0.2
<b>Heavy Metals</b>				
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0002	0.0007
Chromium (filtered)	0.001	mg/L	0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.004	0.23
Lead (filtered)	0.001	mg/L	< 0.001	0.023

Client Sample ID			SE9	NG2
Sample Matrix			Water	Water
Eurofins   mgt Sample No.			M13-JI18364	M13-JI18365
Date Sampled			Jul 24, 2013	Jul 24, 2013
Test/Reference	LOR	Unit		
<b>Heavy Metals</b>				
Manganese (filtered)	0.005	mg/L	< 0.005	0.73
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.001	0.38
Zinc (filtered)	0.001	mg/L	0.019	0.54
<b>Alkali Metals</b>				
Calcium	0.5	mg/L	< 0.5	11
Magnesium	0.5	mg/L	4.2	150
Potassium	0.5	mg/L	3.9	34
Sodium	0.5	mg/L	200	760

### Sample History

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

Description	Testing Site	Extracted	Holding Time
Chloride - Method: MGT 1100A	Melbourne	Jul 25, 2013	28 Day
Conductivity (at 25°C) - Method: APHA 2510 Conductivity by Direct Measurement	Melbourne	Jul 25, 2013	28 Day
pH - Method: APHA 4500 pH by Direct Measurement - ** Samples analysed outside holding time. Analysis should be performed in situ. Results for reference only.	Melbourne	Jul 25, 2013	0 Hours
Sulphate (as S) - Method: In house MGT1110A (SO4 by Discrete Analyser)	Melbourne	Jul 25, 2013	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Jul 31, 2013	7 Day
Total Nitrogen Set (as N) Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jul 25, 2013	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jul 25, 2013	7 Day
Heavy Metals (filtered) - Method: USEPA 6020 Heavy Metals	Melbourne	Jul 25, 2013	180 Day
Mobil Metals : Metals M15 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Jul 25, 2013	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 25, 2013	180 Day

<b>Company Name:</b> Stass Environmental <b>Address:</b> PO BOX 11 KALAMUNDA WA 6926  <b>Client Job No.:</b> OPALVALE CHITTY OV04	<b>Order No.:</b> <b>Report #:</b> 387045 <b>Phone:</b> (08)6363 5276 <b>Fax:</b> (08)9454 7615	<b>Received:</b> Jul 25, 2013 8:21 AM <b>Due:</b> Aug 1, 2013 <b>Priority:</b> 5 Day <b>Contact Name:</b> Andre Stasikowski
<b>Eurofins   mgt Client Manager: Natalie Krasselt</b>		

Sample Detail					Arsenic (filtered)	Cadmium (filtered)	Calcium	Chloride	Chromium (filtered)	Conductivity (at 25°C)	Copper (filtered)	Lead (filtered)	Magnesium	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	pH	Potassium	Sodium	Sulphate (as S)	Total Dissolved Solids	Zinc (filtered)	Total Nitrogen Set (as N)
<b>Laboratory where analysis is conducted</b>																							
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Sydney Laboratory - NATA Site # 18217</b>																							
<b>Brisbane Laboratory - NATA Site # 20794</b>																							
<b>External Laboratory</b>																							
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																			
SE1	Jul 24, 2013		Water	M13-JI18356	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE2	Jul 24, 2013		Water	M13-JI18357	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE3	Jul 24, 2013		Water	M13-JI18358	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE4	Jul 24, 2013		Water	M13-JI18359	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE5	Jul 24, 2013		Water	M13-JI18360	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE6	Jul 24, 2013		Water	M13-JI18361	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE7	Jul 24, 2013		Water	M13-JI18362	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE8	Jul 24, 2013		Water	M13-JI18363	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE9	Jul 24, 2013		Water	M13-JI18364	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NG2	Jul 24, 2013		Water	M13-JI18365	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

## Eurofins | mgt Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

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

### UNITS

**mg/kg:** milligrams per Kilogram

**mg/l:** milligrams per litre

**ug/l:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100ml:** Organisms per 100 millilitres

**NTU:** Units

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

### TERMS

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

### QC - ACCEPTANCE CRITERIA

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

Results <10 times the LOR : No Limit

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

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

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

### QC DATA GENERAL COMMENTS

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

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
<b>Method Blank</b>							
Chloride	mg/L	< 1	1	Pass			
Sulphate (as S)	mg/L	< 5	5	Pass			
Total Dissolved Solids	mg/L	< 10	10	Pass			
<b>Method Blank</b>							
<b>Total Nitrogen Set (as N) Total Nitrogen Set (as N)</b>							
Nitrate & Nitrite (as N)	mg/L	< 0.05	0.05	Pass			
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2	0.2	Pass			
<b>Method Blank</b>							
<b>Heavy Metals (filtered) USEPA 6020 Heavy Metals</b>							
Arsenic (filtered)	mg/L	< 0.001	0.001	Pass			
Cadmium (filtered)	mg/L	< 0.0002	0.0002	Pass			
Chromium (filtered)	mg/L	< 0.001	0.001	Pass			
Copper (filtered)	mg/L	< 0.001	0.001	Pass			
Lead (filtered)	mg/L	< 0.001	0.001	Pass			
Manganese (filtered)	mg/L	< 0.005	0.005	Pass			
Mercury (filtered)	mg/L	< 0.0001	0.0001	Pass			
Nickel (filtered)	mg/L	< 0.001	0.001	Pass			
Zinc (filtered)	mg/L	< 0.001	0.001	Pass			
<b>Method Blank</b>							
<b>Alkali Metals USEPA 6010 Alkali Metals</b>							
Calcium	mg/L	< 0.5	0.5	Pass			
Magnesium	mg/L	< 0.5	0.5	Pass			
Potassium	mg/L	< 0.5	0.5	Pass			
Sodium	mg/L	< 0.5	0.5	Pass			
<b>LCS - % Recovery</b>							
Chloride	%	107	70-130	Pass			
Sulphate (as S)	%	107	70-130	Pass			
<b>LCS - % Recovery</b>							
<b>Total Nitrogen Set (as N) Total Nitrogen Set (as N)</b>							
Nitrate & Nitrite (as N)	%	124	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	95	70-130	Pass			
<b>LCS - % Recovery</b>							
<b>Heavy Metals (filtered) USEPA 6020 Heavy Metals</b>							
Arsenic (filtered)	%	93	80-120	Pass			
Cadmium (filtered)	%	94	80-120	Pass			
Chromium (filtered)	%	96	80-120	Pass			
Copper (filtered)	%	92	80-120	Pass			
Lead (filtered)	%	94	80-120	Pass			
Manganese (filtered)	%	93	80-120	Pass			
Mercury (filtered)	%	92	70-130	Pass			
Nickel (filtered)	%	92	80-120	Pass			
Zinc (filtered)	%	94	80-120	Pass			
<b>LCS - % Recovery</b>							
<b>Alkali Metals USEPA 6010 Alkali Metals</b>							
Calcium	%	104	70-130	Pass			
Magnesium	%	107	70-130	Pass			
Potassium	%	113	70-130	Pass			
Sodium	%	98	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>							

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Total Nitrogen Set (as N)</b>				Result 1					
Nitrate & Nitrite (as N)	M13-JI16126	NCP	%	126			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M13-JI18036	NCP	%	96			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals (filtered)</b>				Result 1					
Arsenic (filtered)	M13-JI18987	NCP	%	88			75-125	Pass	
Cadmium (filtered)	M13-JI18987	NCP	%	83			75-125	Pass	
Chromium (filtered)	M13-JI18987	NCP	%	88			75-125	Pass	
Copper (filtered)	M13-JI18987	NCP	%	82			75-125	Pass	
Lead (filtered)	M13-JI18987	NCP	%	84			75-125	Pass	
Manganese (filtered)	M13-JI18987	NCP	%	87			75-125	Pass	
Mercury (filtered)	M13-JI20169	NCP	%	75			70-130	Pass	
Nickel (filtered)	M13-JI18987	NCP	%	82			75-125	Pass	
Zinc (filtered)	M13-JI18987	NCP	%	84			75-125	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium	B13-JI20045	NCP	%	105			70-130	Pass	
Magnesium	M13-JI18356	CP	%	99			70-130	Pass	
Potassium	M13-JI18356	CP	%	86			70-130	Pass	
Sodium	M13-JI18356	CP	%	107			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Chloride	M13-JI18361	CP	%	117			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Sulphate (as S)	M13-JI18362	CP	%	119			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M13-JI18030	NCP	uS/cm	7800	7700	2.0	30%	Pass	
<b>Duplicate</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M13-JI16126	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals (filtered)</b>				Result 1	Result 2	RPD			
Arsenic (filtered)	M13-JI18987	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M13-JI18987	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M13-JI18987	NCP	mg/L	0.0040	0.0044	<1	30%	Pass	
Copper (filtered)	M13-JI18987	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M13-JI18987	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M13-JI18987	NCP	mg/L	0.016	0.016	<1	30%	Pass	
Nickel (filtered)	M13-JI18987	NCP	mg/L	0.0060	0.0052	5.1	30%	Pass	
Zinc (filtered)	M13-JI18987	NCP	mg/L	0.0080	0.0084	<1	30%	Pass	
<b>Duplicate</b>									
<b>Alkali Metals</b>				Result 1	Result 2	RPD			
Calcium	M13-JI18356	CP	mg/L	2.2	2.1	2.0	30%	Pass	
Magnesium	M13-JI18356	CP	mg/L	42	41	2.0	30%	Pass	
Potassium	M13-JI18356	CP	mg/L	8.0	8.0	<1	30%	Pass	
Sodium	M13-JI18356	CP	mg/L	610	600	2.0	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M13-JI18360	CP	mg/L	2800	2900	4.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Chloride	M13-JI18361	CP	mg/L	1700	1700	<1	30%	Pass
Sulphate (as S)	M13-JI18361	CP	mg/L	94	93	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Mobil Metals : Metals M15				Result 1	Result 2	RPD		
Mercury (filtered)	M13-JI18361	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M13-JI18362	CP	mg/L	3700	3700	<1	30%	Pass
Sulphate (as S)	M13-JI18362	CP	mg/L	59	59	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Nitrogen Set (as N)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M13-JI18364	CP	mg/L	0.9	0.9	4.4	30%	Pass

**Comments**

**Sample Integrity**

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

**Authorised By**

Natalie Krasselt	Client Services
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)



**Glenn Jackson**

**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

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## Certificate of Analysis

Stass Environmental  
 PO BOX 11  
 KALAMUNDA  
 WA 6926



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.

Attention: Andre Stasikowski

Report 402563-W  
 Client Reference OPALVALE CHITTY OV05  
 Received Date Dec 05, 2013

Client Sample ID			SE1	SE2	SE3	SE4
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M13-De05257	M13-De05258	M13-De05259	M13-De05260
Date Sampled			Dec 04, 2013	Dec 04, 2013	Dec 04, 2013	Dec 04, 2013
Test/Reference	LOR	Unit				
Chloride	1	mg/L	1000	2000	4100	99
Conductivity (at 25°C)	10	uS/cm	3300	6100	11000	430
pH	0.1	units	3.3	4.6	3.7	5.7
Sulphate (as S)	5	mg/L	45	110	230	< 5
Total Dissolved Solids	10	mg/L	1900	3400	7000	240
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.08	0.07	5.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.8	< 0.2	< 0.2	5.7
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.003	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0004	0.0007	0.022	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.39	0.10	0.52	0.006
Lead (filtered)	0.001	mg/L	0.083	0.021	0.076	< 0.001
Manganese (filtered)	0.005	mg/L	0.080	0.95	0.79	0.019
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.064	0.45	1.4	0.011
Zinc (filtered)	0.001	mg/L	0.077	0.50	1.3	0.031
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	1.3	10	5.0	1.1
Magnesium	0.5	mg/L	43	170	370	11
Potassium	0.5	mg/L	3.1	38	62	1.5
Sodium	0.5	mg/L	570	890	1900	71

Client Sample ID			SE5	SE6	SE7	SE8
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M13-De05261	M13-De05262	M13-De05263	M13-De05264
Date Sampled			Dec 04, 2013	Dec 04, 2013	Dec 04, 2013	Dec 04, 2013
Test/Reference	LOR	Unit				
Chloride	1	mg/L	1400	2300	3300	39
Conductivity (at 25°C)	10	uS/cm	4300	7400	9000	480
pH	0.1	units	4.7	4.2	3.6	6.7
Sulphate (as S)	5	mg/L	75	120	52	18
Total Dissolved Solids	10	mg/L	2600	3700	4800	320

Client Sample ID			SE5	SE6	SE7	SE8
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M13-De05261	M13-De05262	M13-De05263	M13-De05264
Date Sampled			Dec 04, 2013	Dec 04, 2013	Dec 04, 2013	Dec 04, 2013
Test/Reference	LOR	Unit				
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.10	1.6	6.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	0.9	1.6
Total Nitrogen (as N)	0.2	mg/L	0.26	< 0.2	2.5	7.8
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0026	0.0003	0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.079	0.091	0.14	0.001
Lead (filtered)	0.001	mg/L	0.006	0.012	0.006	< 0.001
Manganese (filtered)	0.005	mg/L	1.5	0.057	0.12	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.46	0.020	0.013	< 0.001
Zinc (filtered)	0.001	mg/L	0.51	0.047	0.025	0.004
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	5.0	2.6	5.7	< 0.5
Magnesium	0.5	mg/L	110	110	170	0.8
Potassium	0.5	mg/L	21	12	6.4	3.3
Sodium	0.5	mg/L	640	1300	1700	130

Client Sample ID			SE9	NG2
Sample Matrix			Water	Water
Eurofins   mgt Sample No.			M13-De05265	M13-De05266
Date Sampled			Dec 04, 2013	Dec 04, 2013
Test/Reference	LOR	Unit		
<b>Total Nitrogen Set (as N)</b>				
Nitrate & Nitrite (as N)	0.05	mg/L	6.1	6.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	6.1	6.1
<b>Heavy Metals</b>				
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	0.001	0.002
Copper (filtered)	0.001	mg/L	0.005	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.001	0.001
Zinc (filtered)	0.001	mg/L	0.012	0.008
<b>Alkali Metals</b>				
Calcium	0.5	mg/L	< 0.5	< 0.5
Magnesium	0.5	mg/L	2.7	2.7

<b>Client Sample ID</b>			<b>SE9</b>	<b>NG2</b>
<b>Sample Matrix</b>			<b>Water</b>	<b>Water</b>
<b>Eurofins   mgt Sample No.</b>			<b>M13-De05265</b>	<b>M13-De05266</b>
<b>Date Sampled</b>			<b>Dec 04, 2013</b>	<b>Dec 04, 2013</b>
Test/Reference	LOR	Unit		
<b>Alkali Metals</b>				
Potassium	0.5	mg/L	2.1	2.1
Sodium	0.5	mg/L	57	160

### 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
Chloride - Method: MGT 1100A	Melbourne	Dec 06, 2013	28 Day
Conductivity (at 25°C) - Method: APHA 2510 Conductivity by Direct Measurement	Melbourne	Dec 09, 2013	28 Day
pH - Method: APHA 4500 pH by Direct Measurement - ** Samples analysed outside holding time. Analysis should be performed in situ. Results for reference only.	Melbourne	Dec 06, 2013	0 Hours
Sulphate (as S) - Method: In house MGT1110A (SO4 by Discrete Analyser)	Melbourne	Dec 06, 2013	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Dec 10, 2013	7 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 06, 2013	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 06, 2013	7 Day
Heavy Metals (filtered) - Method: USEPA 6020 Heavy Metals	Melbourne	Dec 05, 2013	180 Day
Mobil Metals : Metals M15 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Dec 05, 2013	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Dec 05, 2013	180 Day

<b>Company Name:</b> Stass Environmental <b>Address:</b> PO BOX 11 KALAMUNDA WA 6926  <b>Client Job No.:</b> OPALVALE CHITTY OV05	<b>Order No.:</b> <b>Report #:</b> 402563 <b>Phone:</b> (08)6363 5276 <b>Fax:</b> (08)9454 7615	<b>Received:</b> Dec 5, 2013 8:43 AM <b>Due:</b> Dec 12, 2013 <b>Priority:</b> 5 Day <b>Contact Name:</b> Andre Stasikowski
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**Eurofins | mgt Client Manager: Mark Rodriquez**

Sample Detail					Arsenic (filtered)	Cadmium (filtered)	Calcium	Chloride	Chromium (filtered)	Conductivity (at 25°C)	Copper (filtered)	Lead (filtered)	Magnesium	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	pH	Potassium	Sodium	Sulphate (as S)	Total Dissolved Solids	Zinc (filtered)	Total Nitrogen Set (as N)	
<b>Laboratory where analysis is conducted</b>																								
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Sydney Laboratory - NATA Site # 18217</b>																								
<b>Brisbane Laboratory - NATA Site # 20794</b>																								
<b>External Laboratory</b>																								
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																				
SE1	Dec 04, 2013		Water	M13-De05257	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE2	Dec 04, 2013		Water	M13-De05258	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE3	Dec 04, 2013		Water	M13-De05259	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE4	Dec 04, 2013		Water	M13-De05260	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE5	Dec 04, 2013		Water	M13-De05261	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE6	Dec 04, 2013		Water	M13-De05262	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE7	Dec 04, 2013		Water	M13-De05263	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE8	Dec 04, 2013		Water	M13-De05264	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE9	Dec 04, 2013		Water	M13-De05265	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NG2	Dec 04, 2013		Water	M13-De05266	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

## Eurofins | mgt Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

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

### UNITS

**mg/kg:** milligrams per Kilogram

**mg/l:** milligrams per litre

**ug/l:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100ml:** Organisms per 100 millilitres

**NTU:** Units

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

### TERMS

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery
<b>CRM</b>	Certified Reference Material - reported as percent recovery
<b>Method Blank</b>	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.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>Batch Duplicate</b>	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>Batch SPIKE</b>	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>ASLP</b>	Australian Standard Leaching Procedure (AS4439.3)
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	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
<b>TEQ</b>	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.

**Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>						
Chloride	mg/L	< 1		1	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
<b>Method Blank</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	mg/L	< 0.05		0.05	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass	
<b>Method Blank</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002		0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
<b>Method Blank</b>						
<b>Alkali Metals</b>						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
<b>LCS - % Recovery</b>						
Chloride	%	102		70-130	Pass	
Sulphate (as S)	%	106		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	%	96		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	82		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	%	109		80-120	Pass	
Cadmium (filtered)	%	100		80-120	Pass	
Chromium (filtered)	%	102		80-120	Pass	
Copper (filtered)	%	102		80-120	Pass	
Lead (filtered)	%	98		80-120	Pass	
Manganese (filtered)	%	107		80-120	Pass	
Mercury (filtered)	%	92		70-130	Pass	
Nickel (filtered)	%	99		80-120	Pass	
Zinc (filtered)	%	102		80-120	Pass	
<b>LCS - % Recovery</b>						
<b>Alkali Metals</b>						
Calcium	%	100		70-130	Pass	
Magnesium	%	106		70-130	Pass	
Potassium	%	91		70-130	Pass	
Sodium	%	118		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
				Result 1					
Chloride	M13-De05305	NCP	%	106			70-130	Pass	
Sulphate (as S)	M13-De05257	CP	%	101			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1					
Nitrate & Nitrite (as N)	M13-De05257	CP	%	94			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M13-De05257	CP	%	97			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Chromium (filtered)	M13-De03873	NCP	%	96			70-130	Pass	
Nickel (filtered)	M13-De03873	NCP	%	91			70-130	Pass	
Zinc (filtered)	M13-De03873	NCP	%	100			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium	M13-De05488	NCP	%	104			70-130	Pass	
Magnesium	M13-De05257	CP	%	100			70-130	Pass	
Potassium	M13-De05488	NCP	%	92			70-130	Pass	
Sodium	M13-De05257	CP	%	110			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Sulphate (as S)	M13-De05258	CP	%	102			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1					
Nitrate & Nitrite (as N)	M13-De05258	CP	%	80			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Mercury (filtered)	M13-De05258	CP	%	75			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic (filtered)	M13-De05262	CP	%	93			70-130	Pass	
Cadmium (filtered)	M13-De05262	CP	%	83			70-130	Pass	
Copper (filtered)	M13-De05262	CP	%	82			70-130	Pass	
Lead (filtered)	M13-De05262	CP	%	82			70-130	Pass	
Manganese (filtered)	M13-De05262	CP	%	84			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Chloride	M13-De05257	CP	mg/L	1000	1000	<1	30%	Pass	
Sulphate (as S)	M13-De05257	CP	mg/L	45	45	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M13-De05257	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M13-De05257	CP	mg/L	0.8	0.3	94	30%	Fail	Q15
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Mercury (filtered)	M13-De05257	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
<b>Duplicate</b>									
<b>Alkali Metals</b>				Result 1	Result 2	RPD			
Calcium	M13-De05257	CP	mg/L	1.3	1.4	1.0	30%	Pass	
Magnesium	M13-De05257	CP	mg/L	43	43	1.0	30%	Pass	
Potassium	M13-De05257	CP	mg/L	3.1	3.5	11	30%	Pass	
Sodium	M13-De05257	CP	mg/L	570	560	2.0	30%	Pass	

<b>Duplicate</b>				Result 1	Result 2	RPD		
Chloride	M13-De05258	CP	mg/L	2000	1900	<1	30%	Pass
Conductivity (at 25°C)	M13-De05258	CP	uS/cm	6100	6200	2.0	30%	Pass
Sulphate (as S)	M13-De05258	CP	mg/L	110	110	<1	30%	Pass
<b>Duplicate</b>				Result 1	Result 2	RPD		
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	M13-De05258	CP	mg/L	0.08	0.07	17	30%	Pass
<b>Duplicate</b>				Result 1	Result 2	RPD		
Total Dissolved Solids	M13-De05262	CP	mg/L	3700	3900	5.0	30%	Pass
<b>Duplicate</b>				Result 1	Result 2	RPD		
<b>Heavy Metals</b>				Result 1	Result 2	RPD		
Arsenic (filtered)	M13-De05262	CP	mg/L	0.001	0.002	23	30%	Pass
Cadmium (filtered)	M13-De05262	CP	mg/L	0.0003	0.0002	22	30%	Pass
Chromium (filtered)	M13-De05262	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M13-De05262	CP	mg/L	0.091	0.089	1.5	30%	Pass
Lead (filtered)	M13-De05262	CP	mg/L	0.012	0.012	2.6	30%	Pass
Manganese (filtered)	M13-De05262	CP	mg/L	0.057	0.056	1.9	30%	Pass
Nickel (filtered)	M13-De05262	CP	mg/L	0.020	0.020	<1	30%	Pass
Zinc (filtered)	M13-De05262	CP	mg/L	0.047	0.047	<1	30%	Pass
<b>Duplicate</b>				Result 1	Result 2	RPD		
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	M13-De05265	CP	mg/L	6.1	6.1	1.0	30%	Pass

**Comments**

**Sample Integrity**

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

**Qualifier Codes/Comments**

Code	Description
Q15	The RPD reported passes Eurofins   mgt's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

**Authorised By**

Mark Rodriguez	Client Services
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)



**Glenn Jackson**

**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

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## Certificate of Analysis

Stass Environmental  
PO BOX 11  
KALAMUNDA  
WA 6926



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.

Attention: **Andre Stasikowski**

Report **412062-W**  
Client Reference **OPALVALE CHITTY OV06**  
Received Date **Mar 17, 2014**

Client Sample ID			SE1	SE2	SE3	SE4
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M14-Ma12755	M14-Ma12756	M14-Ma12757	M14-Ma12758
Date Sampled			Mar 14, 2014	Mar 14, 2014	Mar 14, 2014	Mar 14, 2014
Test/Reference	LOR	Unit				
Chloride	1	mg/L	1100	4200	2400	130
Conductivity (at 25°C)	10	uS/cm	3400	13000	7300	400
pH	0.1	units	3.6	4.1	3.4	5.8
Sulphate (as S)	5	mg/L	47	190	160	< 5
Total Dissolved Solids	10	mg/L	1900	7200	4000	240
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.06	2.1	7.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.7
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	2.1	7.9
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0003	0.0021	0.022	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.39	1.2	0.15	0.004
Lead (filtered)	0.001	mg/L	0.090	0.47	0.043	< 0.001
Manganese (filtered)	0.005	mg/L	0.12	1.1	1.1	0.014
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.096	1.0	2.6	0.008
Zinc (filtered)	0.001	mg/L	0.14	0.92	2.6	0.022
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	<sup>G01</sup> < 5	16	5.8	<sup>G01</sup> < 5
Magnesium	0.5	mg/L	42	310	240	11
Potassium	0.5	mg/L	<sup>G01</sup> < 5	43	47	<sup>G01</sup> < 5
Sodium	0.5	mg/L	630	2100	1200	69

Client Sample ID			SE5	SE6	SE7	SE8
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M14-Ma12759	M14-Ma12760	M14-Ma12761	M14-Ma12762
Date Sampled			Mar 14, 2014	Mar 14, 2014	Mar 14, 2014	Mar 14, 2014
Test/Reference	LOR	Unit				
Chloride	1	mg/L	3200	2600	4100	160
Conductivity (at 25°C)	10	uS/cm	9800	8200	11000	630
pH	0.1	units	5.2	4.5	3.7	6.5
Sulphate (as S)	5	mg/L	140	120	62	17
Total Dissolved Solids	10	mg/L	5500	4600	6000	420

Client Sample ID			SE5	SE6	SE7	SE8
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M14-Ma12759	M14-Ma12760	M14-Ma12761	M14-Ma12762
Date Sampled			Mar 14, 2014	Mar 14, 2014	Mar 14, 2014	Mar 14, 2014
Test/Reference	LOR	Unit				
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.12	0.82	7.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.8
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.8	8.6
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0005	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	0.001	0.004	0.003	< 0.001
Copper (filtered)	0.001	mg/L	0.043	0.062	0.096	0.002
Lead (filtered)	0.001	mg/L	0.011	0.013	0.010	< 0.001
Manganese (filtered)	0.005	mg/L	1.3	0.042	0.13	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.31	0.017	0.040	< 0.001
Zinc (filtered)	0.001	mg/L	0.35	0.057	0.086	0.006
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	7.4	<sup>G01</sup> < 5	5.4	<sup>G01</sup> < 5
Magnesium	0.5	mg/L	170	110	190	<sup>G01</sup> < 5
Potassium	0.5	mg/L	26	7.7	<sup>G01</sup> < 5	<sup>G01</sup> < 5
Sodium	0.5	mg/L	1800	1500	2200	140

Client Sample ID			SE9	NG2
Sample Matrix			Water	Water
Eurofins   mgt Sample No.			M14-Ma12763	M14-Ma12764
Date Sampled			Mar 14, 2014	Mar 14, 2014
Test/Reference	LOR	Unit		
<b>Total Nitrogen Set (as N)</b>				
Nitrate & Nitrite (as N)	0.05	mg/L	7.9	7.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.8
Total Nitrogen (as N)	0.2	mg/L	8.5	8.6
<b>Heavy Metals</b>				
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	0.001
Copper (filtered)	0.001	mg/L	0.004	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	0.015	0.026
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.002	0.003
Zinc (filtered)	0.001	mg/L	0.032	0.039

<b>Client Sample ID</b>			<b>SE9</b>	<b>NG2</b>
<b>Sample Matrix</b>			<b>Water</b>	<b>Water</b>
<b>Eurofins   mgt Sample No.</b>			<b>M14-Ma12763</b>	<b>M14-Ma12764</b>
<b>Date Sampled</b>			<b>Mar 14, 2014</b>	<b>Mar 14, 2014</b>
Test/Reference	LOR	Unit		
<b>Alkali Metals</b>				
Calcium	0.5	mg/L	G01 < 5	G01 < 5
Magnesium	0.5	mg/L	G01 < 5	G01 < 5
Potassium	0.5	mg/L	G01 < 5	G01 < 5
Sodium	0.5	mg/L	170	190

### 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
Chloride - Method: MGT 1100A	Melbourne	Mar 17, 2014	28 Day
Conductivity (at 25°C) - Method: APHA 2510 Conductivity by Direct Measurement	Melbourne	Mar 17, 2014	28 Day
pH - Method: APHA 4500 pH by Direct Measurement - ** Samples analysed outside holding time. Analysis should be performed in situ. Results for reference only.	Melbourne	Mar 18, 2014	0 Hours
Sulphate (as S) - Method: In house MGT1110A (SO4 by Discrete Analyser)	Melbourne	Mar 17, 2014	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Mar 21, 2014	7 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 18, 2014	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 18, 2014	7 Day
Heavy Metals (filtered) - Method: USEPA 6020 Heavy Metals	Melbourne	Mar 17, 2014	180 Day
Mobil Metals : Metals M15 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Mar 17, 2014	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 17, 2014	180 Day

<b>Company Name:</b> Stass Environmental <b>Address:</b> PO BOX 11 KALAMUNDA WA 6926  <b>Client Job No.:</b> OPALVALE CHITTY OV06	<b>Order No.:</b> <b>Report #:</b> 412062 <b>Phone:</b> (08)6363 5276 <b>Fax:</b> (08)9454 7615	<b>Received:</b> Mar 17, 2014 9:06 AM <b>Due:</b> Mar 24, 2014 <b>Priority:</b> 5 Day <b>Contact Name:</b> Andre Stasikowski
<b>Eurofins   mgt Client Manager: Natalie Krasselt</b>		

Sample Detail					Arsenic (filtered)	Cadmium (filtered)	Calcium	Chloride	Chromium (filtered)	Conductivity (at 25°C)	Copper (filtered)	Lead (filtered)	Magnesium	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	pH	Potassium	Sodium	Sulphate (as S)	Total Dissolved Solids	Zinc (filtered)	Total Nitrogen Set (as N)	
<b>Laboratory where analysis is conducted</b>																								
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Sydney Laboratory - NATA Site # 18217</b>																								
<b>Brisbane Laboratory - NATA Site # 20794</b>																								
<b>External Laboratory</b>																								
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																				
SE1	Mar 14, 2014		Water	M14-Ma12755	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE2	Mar 14, 2014		Water	M14-Ma12756	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE3	Mar 14, 2014		Water	M14-Ma12757	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE4	Mar 14, 2014		Water	M14-Ma12758	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE5	Mar 14, 2014		Water	M14-Ma12759	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE6	Mar 14, 2014		Water	M14-Ma12760	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE7	Mar 14, 2014		Water	M14-Ma12761	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE8	Mar 14, 2014		Water	M14-Ma12762	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE9	Mar 14, 2014		Water	M14-Ma12763	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NG2	Mar 14, 2014		Water	M14-Ma12764	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

## Eurofins | mgt Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

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

### UNITS

**mg/kg:** milligrams per Kilogram

**mg/l:** milligrams per litre

**ug/l:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100ml:** Organisms per 100 millilitres

**NTU:** Units

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

### TERMS

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery
<b>CRM</b>	Certified Reference Material - reported as percent recovery
<b>Method Blank</b>	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.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>Batch Duplicate</b>	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>Batch SPIKE</b>	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>ASLP</b>	Australian Standard Leaching Procedure (AS4439.3)
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	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
<b>TEQ</b>	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.

**Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>						
Chloride	mg/L	< 1		1	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
<b>Method Blank</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	mg/L	< 0.05		0.05	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass	
<b>Method Blank</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002		0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
<b>Method Blank</b>						
<b>Alkali Metals</b>						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
<b>LCS - % Recovery</b>						
Chloride	%	104		70-130	Pass	
Sulphate (as S)	%	100		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	%	110		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	87		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	%	93		80-120	Pass	
Cadmium (filtered)	%	96		80-120	Pass	
Chromium (filtered)	%	92		80-120	Pass	
Copper (filtered)	%	92		80-120	Pass	
Lead (filtered)	%	94		80-120	Pass	
Manganese (filtered)	%	95		80-120	Pass	
Mercury (filtered)	%	82		70-130	Pass	
Nickel (filtered)	%	93		80-120	Pass	
Zinc (filtered)	%	96		80-120	Pass	
<b>LCS - % Recovery</b>						
<b>Alkali Metals</b>						
Calcium	%	86		70-130	Pass	
Magnesium	%	86		70-130	Pass	
Potassium	%	84		70-130	Pass	
Sodium	%	80		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
				Result 1					
Sulphate (as S)	M14-Ma15973	NCP	%	87			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1					
Nitrate & Nitrite (as N)	M14-Ma11876	NCP	%	70			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Mercury (filtered)	M14-Ma13777	NCP	%	81			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium	M14-Ma12756	CP	%	93			70-130	Pass	
Magnesium	M14-Ma12756	CP	%	109			70-130	Pass	
Potassium	M14-Ma12756	CP	%	93			70-130	Pass	
Sodium	M14-Ma12756	CP	%	114			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Chloride	M14-Ma12757	CP	%	98			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic (filtered)	M14-Ma12763	CP	%	86			70-130	Pass	
Cadmium (filtered)	M14-Ma12763	CP	%	84			70-130	Pass	
Chromium (filtered)	M14-Ma12763	CP	%	89			70-130	Pass	
Copper (filtered)	M14-Ma12763	CP	%	80			70-130	Pass	
Lead (filtered)	M14-Ma12763	CP	%	88			70-130	Pass	
Manganese (filtered)	M14-Ma12763	CP	%	92			70-130	Pass	
Nickel (filtered)	M14-Ma12763	CP	%	79			70-130	Pass	
Zinc (filtered)	M14-Ma12763	CP	%	101			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1					
Total Kjeldahl Nitrogen (as N)	M14-Ma12764	CP	%	81			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M14-Ma12755	CP	mg/L	1900	2100	5.0	30%	Pass	
<b>Duplicate</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M14-Ma12533	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
<b>Duplicate</b>									
<b>Alkali Metals</b>				Result 1	Result 2	RPD			
Calcium	M14-Ma12756	CP	mg/L	16	16	1.0	30%	Pass	
Magnesium	M14-Ma12756	CP	mg/L	310	310	1.0	30%	Pass	
Potassium	M14-Ma12756	CP	mg/L	43	43	<1	30%	Pass	
Sodium	M14-Ma12756	CP	mg/L	2100	2000	3.0	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Chloride	M14-Ma12757	CP	mg/L	2400	2400	1.1	30%	Pass	
Sulphate (as S)	M14-Ma12757	CP	mg/L	160	160	<1	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic (filtered)	M14-Ma12763	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M14-Ma12763	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M14-Ma12763	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M14-Ma12763	CP	mg/L	0.004	0.004	<1	30%	Pass	

<b>Duplicate</b>								
<b>Heavy Metals</b>				Result 1	Result 2	RPD		
Lead (filtered)	M14-Ma12763	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M14-Ma12763	CP	mg/L	0.015	0.016	4.7	30%	Pass
Mercury (filtered)	M14-Ma12763	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M14-Ma12763	CP	mg/L	0.002	0.002	2.8	30%	Pass
Zinc (filtered)	M14-Ma12763	CP	mg/L	0.032	0.034	5.6	30%	Pass
<b>Duplicate</b>								
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M14-Ma12764	CP	mg/L	0.8	0.9	6.4	30%	Pass

**Comments**

**Sample Integrity**

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

**Qualifier Codes/Comments**

<b>Code</b>	<b>Description</b>
G01	The LORs have been raised due to matrix interference

**Authorised By**

Natalie Krasselt	Client Services
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)



**Glenn Jackson  
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

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Stass Environmental  
PO BOX 11  
KALAMUNDA  
WA 6926



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.

Attention: Andre Stasikowski

Report 422159-W  
Client Reference OPALVALE CHITTY OV06  
Received Date Jun 18, 2014

Client Sample ID			SE1	SE2	SE3	SE4
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M14-Jn14082	M14-Jn14083	M14-Jn14084	M14-Jn14085
Date Sampled			Jun 17, 2014	Jun 17, 2014	Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit				
Chloride	1	mg/L	1000	4400	2900	160
Conductivity (at 25°C)	10	uS/cm	3900	14000	11000	680
pH	0.1	units	3.6	3.7	2.9	5.1
Sulphate (as S)	5	mg/L	41	180	150	7.3
Total Dissolved Solids	10	mg/L	1800	7300	4900	330
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.06	0.27	7.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	3.8	3.0	3.6
Total Nitrogen (as N)	0.2	mg/L	< 0.2	3.9	3.3	11
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.005	< 0.005	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0003	0.0018	0.039	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.005	< 0.005	< 0.001
Copper (filtered)	0.001	mg/L	0.35	1.6	0.051	0.010
Lead (filtered)	0.001	mg/L	0.086	0.61	0.11	< 0.001
Manganese (filtered)	0.005	mg/L	0.069	1.1	1.4	0.015
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.069	1.1	4.2	0.011
Zinc (filtered)	0.001	mg/L	0.077	0.91	3.8	0.020
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	1.1	21	4.9	0.8
Magnesium	0.5	mg/L	39	390	310	12
Potassium	0.5	mg/L	2.6	52	69	1.4
Sodium	0.5	mg/L	620	2100	1400	99

Client Sample ID			SE5	SE6	SE7	SE8
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M14-Jn14086	M14-Jn14087	M14-Jn14088	M14-Jn14089
Date Sampled			Jun 17, 2014	Jun 17, 2014	Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit				
Chloride	1	mg/L	1100	2800	3900	220
Conductivity (at 25°C)	10	uS/cm	3900	9300	12000	1100
pH	0.1	units	5.1	4.2	3.7	5.6
Sulphate (as S)	5	mg/L	52	100	58	11
Total Dissolved Solids	10	mg/L	1800	4300	5800	520
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	0.12	0.20	0.91	7.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.8	2.9	9.4	0.3
Total Nitrogen (as N)	0.2	mg/L	2.9	3.1	10	7.3
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.005	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0010	< 0.0002	< 0.001	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	0.003	< 0.005	< 0.001
Copper (filtered)	0.001	mg/L	0.008	0.057	0.097	0.006
Lead (filtered)	0.001	mg/L	< 0.001	0.015	< 0.025	< 0.001
Manganese (filtered)	0.005	mg/L	1.6	0.044	0.095	0.008
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.44	0.020	0.047	0.004
Zinc (filtered)	0.001	mg/L	0.39	0.040	0.074	0.009
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	2.9	2.8	6.7	< 0.5
Magnesium	0.5	mg/L	74	130	200	2.1
Potassium	0.5	mg/L	18	9.5	6.2	2.4
Sodium	0.5	mg/L	590	1600	2100	100

Client Sample ID			SE9	NG2
Sample Matrix			Water	Water
Eurofins   mgt Sample No.			M14-Jn14090	M14-Jn14091
Date Sampled			Jun 17, 2014	Jun 17, 2014
Test/Reference	LOR	Unit		
Chloride	1	mg/L	58	110
Conductivity (at 25°C)	10	uS/cm	730	710
pH	0.1	units	5.3	6.0
Sulphate (as S)	5	mg/L	66	9.9
Total Dissolved Solids	10	mg/L	450	360
<b>Total Nitrogen Set (as N)</b>				
Nitrate & Nitrite (as N)	0.05	mg/L	7.9	7.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.5	3.2
Total Nitrogen (as N)	0.2	mg/L	11	10
<b>Heavy Metals</b>				
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.004	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005

<b>Client Sample ID</b>			<b>SE9</b>	<b>NG2</b>
<b>Sample Matrix</b>			<b>Water</b>	<b>Water</b>
<b>Eurofins   mgt Sample No.</b>			<b>M14-Jn14090</b>	<b>M14-Jn14091</b>
<b>Date Sampled</b>			<b>Jun 17, 2014</b>	<b>Jun 17, 2014</b>
Test/Reference	LOR	Unit		
<b>Heavy Metals</b>				
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.001	0.002
Zinc (filtered)	0.001	mg/L	0.013	0.006
<b>Alkali Metals</b>				
Calcium	0.5	mg/L	< 0.5	< 0.5
Magnesium	0.5	mg/L	2.1	2.1
Potassium	0.5	mg/L	1.7	2.3
Sodium	0.5	mg/L	120	110

### 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
Chloride - Method: MGT 1100A	Melbourne	Jun 18, 2014	28 Day
Conductivity (at 25°C) - Method: APHA 2510 Conductivity by Direct Measurement	Melbourne	Jun 18, 2014	28 Day
pH - Method: APHA 4500 pH by Direct Measurement - ** Samples analysed outside holding time. Analysis should be performed in situ. Results for reference only.	Melbourne	Jun 18, 2014	0 Hours
Sulphate (as S) - Method: In house MGT1110A (SO4 by Discrete Analyser)	Melbourne	Jun 18, 2014	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Jun 18, 2014	7 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jun 18, 2014	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jun 18, 2014	7 Day
Heavy Metals (filtered) - Method: USEPA 6020 Heavy Metals	Melbourne	Jun 18, 2014	180 Day
Mobil Metals : Metals M15 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Jun 18, 2014	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jun 18, 2014	180 Day

<b>Company Name:</b> Stass Environmental <b>Address:</b> PO BOX 11 KALAMUNDA WA 6926  <b>Client Job No.:</b> OPALVALE CHITTY OV06	<b>Order No.:</b> <b>Report #:</b> 422159 <b>Phone:</b> (08)6363 5276 <b>Fax:</b> (08)9454 7615	<b>Received:</b> Jun 18, 2014 8:38 AM <b>Due:</b> Jun 25, 2014 <b>Priority:</b> 5 Day <b>Contact Name:</b> Andre Stasikowski
<b>Eurofins   mgt Client Manager: Natalie Krasselt</b>		

Sample Detail					Arsenic (filtered)	Cadmium (filtered)	Calcium	Chloride	Chromium (filtered)	Conductivity (at 25°C)	Copper (filtered)	Lead (filtered)	Magnesium	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	pH	Potassium	Sodium	Sulphate (as S)	Total Dissolved Solids	Zinc (filtered)	Total Nitrogen Set (as N)	
<b>Laboratory where analysis is conducted</b>																								
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Sydney Laboratory - NATA Site # 18217</b>																								
<b>Brisbane Laboratory - NATA Site # 20794</b>																								
<b>External Laboratory</b>																								
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																				
SE1	Jun 17, 2014		Water	M14-Jn14082	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE2	Jun 17, 2014		Water	M14-Jn14083	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE3	Jun 17, 2014		Water	M14-Jn14084	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE4	Jun 17, 2014		Water	M14-Jn14085	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE5	Jun 17, 2014		Water	M14-Jn14086	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE6	Jun 17, 2014		Water	M14-Jn14087	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE7	Jun 17, 2014		Water	M14-Jn14088	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE8	Jun 17, 2014		Water	M14-Jn14089	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SE9	Jun 17, 2014		Water	M14-Jn14090	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NG2	Jun 17, 2014		Water	M14-Jn14091	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

## Eurofins | mgt Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

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

### UNITS

**mg/kg:** milligrams per Kilogram

**mg/l:** milligrams per litre

**ug/l:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100ml:** Organisms per 100 millilitres

**NTU:** Units

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

### TERMS

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery
<b>CRM</b>	Certified Reference Material - reported as percent recovery
<b>Method Blank</b>	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.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>Batch Duplicate</b>	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>Batch SPIKE</b>	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>ASLP</b>	Australian Standard Leaching Procedure (AS4439.3)
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	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
<b>TEQ</b>	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.

**Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>						
Chloride	mg/L	< 1		1	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
<b>Method Blank</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	mg/L	< 0.05		0.05	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass	
<b>Method Blank</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002		0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
<b>Method Blank</b>						
<b>Alkali Metals</b>						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
<b>LCS - % Recovery</b>						
Chloride	%	103		70-130	Pass	
Sulphate (as S)	%	108		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	%	110		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	86		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	%	97		80-120	Pass	
Cadmium (filtered)	%	97		80-120	Pass	
Chromium (filtered)	%	90		80-120	Pass	
Copper (filtered)	%	94		80-120	Pass	
Lead (filtered)	%	100		80-120	Pass	
Manganese (filtered)	%	90		80-120	Pass	
Mercury (filtered)	%	102		70-130	Pass	
Nickel (filtered)	%	93		80-120	Pass	
Zinc (filtered)	%	95		80-120	Pass	
<b>LCS - % Recovery</b>						
<b>Alkali Metals</b>						
Calcium	%	99		70-130	Pass	
Magnesium	%	103		70-130	Pass	
Potassium	%	99		70-130	Pass	
Sodium	%	101		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1					
Nitrate & Nitrite (as N)	M14-Jn13515	NCP	%	111			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M14-Jn14082	CP	%	70			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Mercury (filtered)	M14-Jn14082	CP	%	93			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium	M14-Jn14759	NCP	%	101			70-130	Pass	
Magnesium	M14-Jn14759	NCP	%	99			70-130	Pass	
Potassium	M14-Jn14759	NCP	%	93			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Chloride	M14-Jn14086	CP	%	116			70-130	Pass	
Sulphate (as S)	M14-Jn14086	CP	%	111			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Chloride	M14-Jn14088	CP	%	111			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic (filtered)	M14-Jn14091	CP	%	92			70-130	Pass	
Cadmium (filtered)	M14-Jn14091	CP	%	92			70-130	Pass	
Chromium (filtered)	M14-Jn14091	CP	%	84			70-130	Pass	
Copper (filtered)	M14-Jn14091	CP	%	88			70-130	Pass	
Lead (filtered)	M14-Jn14091	CP	%	96			70-130	Pass	
Manganese (filtered)	M14-Jn14091	CP	%	86			70-130	Pass	
Nickel (filtered)	M14-Jn14091	CP	%	85			70-130	Pass	
Zinc (filtered)	M14-Jn14091	CP	%	90			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Sodium	M14-Jn14091	CP	%	100			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M14-Jn13525	NCP	mg/L	7.9	8.0	1.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M14-Jn14082	CP	mg/L	< 0.2	< 0.2	< 1	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Mercury (filtered)	M14-Jn14082	CP	mg/L	< 0.0001	< 0.0001	< 1	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Chloride	M14-Jn14086	CP	mg/L	1100	1100	< 1	30%	Pass	
Sulphate (as S)	M14-Jn14086	CP	mg/L	52	52	1.1	30%	Pass	
Total Dissolved Solids	M14-Jn14086	CP	mg/L	1800	1900	2.0	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Chloride	M14-Jn14091	CP	mg/L	110	110	< 1	30%	Pass	
Sulphate (as S)	M14-Jn14091	CP	mg/L	9.9	9.8	< 1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M14-Jn14091	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M14-Jn14091	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	M14-Jn14091	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M14-Jn14091	CP	mg/L	0.003	0.003	<1	30%	Pass
Lead (filtered)	M14-Jn14091	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M14-Jn14091	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Nickel (filtered)	M14-Jn14091	CP	mg/L	0.002	0.002	2.8	30%	Pass
Zinc (filtered)	M14-Jn14091	CP	mg/L	0.006	0.006	2.9	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M14-Jn14091	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Magnesium	M14-Jn14091	CP	mg/L	2.1	2.1	<1	30%	Pass
Potassium	M14-Jn14091	CP	mg/L	2.3	2.4	2.0	30%	Pass
Sodium	M14-Jn14091	CP	mg/L	110	110	2.0	30%	Pass

**Comments**

**Sample Integrity**

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

**Authorised By**

Natalie Krasselt	Client Services
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)



**Glenn Jackson**

**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

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## Certificate of Analysis

Stass Environmental  
PO BOX 11  
KALAMUNDA  
WA 6926



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.

Attention: Andre Stasikowski

Report 432062-W  
Client Reference OPALVALE CHITTY OV06  
Received Date Sep 15, 2014

Client Sample ID			SE1	SE2	SE3	SE4
Sample Matrix			Water	Water	Water	Water
Eurofins   mgt Sample No.			M14-Se11684	M14-Se11685	M14-Se11686	M14-Se11687
Date Sampled			Sep 12, 2014	Sep 12, 2014	Sep 12, 2014	Sep 12, 2014
Test/Reference	LOR	Unit				
Chloride	1	mg/L	1000	4800	2900	100
Conductivity (at 25°C)	10	uS/cm	3700	14000	9400	440
pH	0.1	pH Units	3.5	3.8	3.4	6.1
Sulphate (as S)	5	mg/L	41	240	190	5.6
Total Dissolved Solids	10	mg/L	1900	9000	5100	260
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	7.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	0.3
Total Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	8.0
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	0.001	0.002	0.004	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0003	0.0019	0.027	< 0.0002
Chromium (filtered)	0.001	mg/L	0.001	0.004	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.46	1.8	0.010	0.013
Lead (filtered)	0.001	mg/L	0.096	0.66	0.10	< 0.001
Manganese (filtered)	0.005	mg/L	0.093	1.2	1.8	0.017
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.098	1.2	3.8	0.014
Zinc (filtered)	0.001	mg/L	0.10	0.91	3.2	0.024
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	1.1	25	3.7	0.9
Magnesium	0.5	mg/L	40	420	300	9.9
Potassium	0.5	mg/L	2.8	53	66	1.5
Sodium	0.5	mg/L	550	2100	1200	70

Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SE5 Water M14-Se11688 Sep 12, 2014	SE6 Water M14-Se11689 Sep 12, 2014	SE7 Water M14-Se11690 Sep 12, 2014	SE8 Water M14-Se11691 Sep 12, 2014
Chloride	1	mg/L	910	2800	3900	48
Conductivity (at 25°C)	10	uS/cm	3300	8700	12000	400
pH	0.1	pH Units	5.9	4.3	3.7	7.1
Sulphate (as S)	5	mg/L	44	110	60	12
Total Dissolved Solids	10	mg/L	1800	4500	6800	270
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.13	0.98	5.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.0	5.7
<b>Heavy Metals</b>						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Cadmium (filtered)	0.0002	mg/L	0.0004	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	0.005	0.002	< 0.001
Copper (filtered)	0.001	mg/L	0.003	0.085	0.093	0.002
Lead (filtered)	0.001	mg/L	< 0.001	0.014	0.003	< 0.001
Manganese (filtered)	0.005	mg/L	1.6	0.055	0.10	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.49	0.029	0.046	< 0.001
Zinc (filtered)	0.001	mg/L	0.38	0.052	0.058	0.004
<b>Alkali Metals</b>						
Calcium	0.5	mg/L	1.7	2.2	5.5	< 0.5
Magnesium	0.5	mg/L	70	100	100	1.3
Potassium	0.5	mg/L	17	11	7.2	2.3
Sodium	0.5	mg/L	470	1500	1800	81

Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SE9 Water M14-Se11692 Sep 12, 2014	NG2 Water M14-Se11693 Sep 12, 2014
Chloride	1	mg/L	59	58
Conductivity (at 25°C)	10	uS/cm	700	700
pH	0.1	pH Units	7.4	5.9
Sulphate (as S)	5	mg/L	66	67
Total Dissolved Solids	10	mg/L	490	480
<b>Total Nitrogen Set (as N)</b>				
Nitrate & Nitrite (as N)	0.05	mg/L	7.5	8.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	7.7	8.0
<b>Heavy Metals</b>				
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.007	0.007
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005

Client Sample ID			SE9	NG2
Sample Matrix			Water	Water
Eurofins   mgt Sample No.			M14-Se11692	M14-Se11693
Date Sampled			Sep 12, 2014	Sep 12, 2014
Test/Reference	LOR	Unit		
<b>Heavy Metals</b>				
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.003	0.003
Zinc (filtered)	0.001	mg/L	0.038	0.039
<b>Alkali Metals</b>				
Calcium	0.5	mg/L	< 0.5	< 0.5
Magnesium	0.5	mg/L	1.8	1.9
Potassium	0.5	mg/L	1.9	1.8
Sodium	0.5	mg/L	130	130

## 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
Chloride - Method: MGT 1100A	Melbourne	Sep 16, 2014	28 Day
Conductivity (at 25°C) - Method: APHA 2510 Conductivity by Direct Measurement	Melbourne	Sep 16, 2014	28 Day
pH - Method: APHA 4500 pH by Direct Measurement - ** Samples analysed outside holding time. Analysis should be performed in situ. Results for reference only.	Melbourne	Sep 16, 2014	0 Hours
Sulphate (as S) - Method: In house MGT1110A (SO4 by Discrete Analyser)	Melbourne	Sep 16, 2014	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Sep 19, 2014	7 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 16, 2014	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 16, 2014	7 Day
Heavy Metals (filtered) - Method: USEPA 6020 Heavy Metals	Melbourne	Sep 15, 2014	180 Day
Mobil Metals : Metals M15 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Sep 15, 2014	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Sep 15, 2014	180 Day

<b>Company Name:</b> Stass Environmental	<b>Order No.:</b>	<b>Received:</b> Sep 15, 2014 8:32 AM
<b>Address:</b> PO BOX 11 KALAMUNDA WA 6926	<b>Report #:</b> 432062	<b>Due:</b> Sep 22, 2014
	<b>Phone:</b> (08)6363 5276	<b>Priority:</b> 5 Day
	<b>Fax:</b> (08)9454 7615	<b>Contact Name:</b> Andre Stasikowski
<b>Client Job No.:</b> OPALVALE CHITTY OV06	<b>Eurofins   mgt Client Manager: Natalie Krasselt</b>	

Sample Detail					Arsenic (filtered)	Cadmium (filtered)	Chloride	Chromium (filtered)	Conductivity (at 25°C)	Copper (filtered)	Lead (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	pH	Sulphate (as S)	Total Dissolved Solids	Zinc (filtered)	Alkali Metals	Total Nitrogen Set (as N)
<b>Laboratory where analysis is conducted</b>																				
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Sydney Laboratory - NATA Site # 18217</b>																				
<b>Brisbane Laboratory - NATA Site # 20794</b>																				
<b>External Laboratory</b>																				
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																
SE1	Sep 12, 2014		Water	M14-Se11684	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE2	Sep 12, 2014		Water	M14-Se11685	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE3	Sep 12, 2014		Water	M14-Se11686	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE4	Sep 12, 2014		Water	M14-Se11687	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE5	Sep 12, 2014		Water	M14-Se11688	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE6	Sep 12, 2014		Water	M14-Se11689	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE7	Sep 12, 2014		Water	M14-Se11690	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE8	Sep 12, 2014		Water	M14-Se11691	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE9	Sep 12, 2014		Water	M14-Se11692	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NG2	Sep 12, 2014		Water	M14-Se11693	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

## Eurofins | mgt Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual 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

**mg/l:** milligrams per litre

**ug/l:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100ml:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

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

### TERMS

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery
<b>CRM</b>	Certified Reference Material - reported as percent recovery
<b>Method Blank</b>	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.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>Batch Duplicate</b>	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>Batch SPIKE</b>	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>ASLP</b>	Australian Standard Leaching Procedure (AS4439.3)
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	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
<b>TEQ</b>	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.

**Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>						
Chloride	mg/L	< 1		1	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
<b>Method Blank</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	mg/L	< 0.05		0.05	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass	
<b>Method Blank</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002		0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
<b>Method Blank</b>						
<b>Alkali Metals</b>						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
<b>LCS - % Recovery</b>						
Chloride	%	108		70-130	Pass	
Sulphate (as S)	%	106		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Nitrogen Set (as N)</b>						
Nitrate & Nitrite (as N)	%	95		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	80		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Arsenic (filtered)	%	111		80-120	Pass	
Cadmium (filtered)	%	102		80-120	Pass	
Chromium (filtered)	%	105		80-120	Pass	
Copper (filtered)	%	109		80-120	Pass	
Lead (filtered)	%	104		80-120	Pass	
Manganese (filtered)	%	111		80-120	Pass	
Mercury (filtered)	%	103		70-130	Pass	
Nickel (filtered)	%	108		80-120	Pass	
Zinc (filtered)	%	110		80-120	Pass	
<b>LCS - % Recovery</b>						
<b>Alkali Metals</b>						
Calcium	%	95		70-130	Pass	
Magnesium	%	104		70-130	Pass	
Potassium	%	95		70-130	Pass	
Sodium	%	99		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
				Result 1					
Chloride	M14-Se12214	NCP	%	118			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1					
Total Kjeldahl Nitrogen (as N)	M14-Se11684	CP	%	71			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic (filtered)	M14-Se11684	CP	%	95			70-130	Pass	
Cadmium (filtered)	M14-Se11684	CP	%	88			70-130	Pass	
Chromium (filtered)	M14-Se11684	CP	%	92			70-130	Pass	
Copper (filtered)	M14-Se12246	NCP	%	99			70-130	Pass	
Lead (filtered)	M14-Se11684	CP	%	86			70-130	Pass	
Manganese (filtered)	M14-Se11684	CP	%	83			70-130	Pass	
Mercury (filtered)	M14-Se12246	NCP	%	97			70-130	Pass	
Nickel (filtered)	M14-Se11684	CP	%	81			70-130	Pass	
Zinc (filtered)	M14-Se11684	CP	%	80			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium	M14-Se14251	NCP	%	95			70-130	Pass	
Magnesium	M14-Se14251	NCP	%	90			70-130	Pass	
Potassium	M14-Se14251	NCP	%	91			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Sulphate (as S)	M14-Se11689	CP	%	109			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1					
Nitrate & Nitrite (as N)	M14-Se11690	CP	%	92			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Sodium	M14-Se11693	CP	%	99			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
pH	M14-Se11684	CP	pH Units	3.5	3.5	pass	30%	Pass	
<b>Duplicate</b>									
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M14-Se11684	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic (filtered)	M14-Se11684	CP	mg/L	0.001	0.001	4.0	30%	Pass	
Cadmium (filtered)	M14-Se11684	CP	mg/L	0.0003	0.0003	7.0	30%	Pass	
Chromium (filtered)	M14-Se11684	CP	mg/L	0.001	0.001	13	30%	Pass	
Copper (filtered)	M14-Se11684	CP	mg/L	0.46	0.46	<1	30%	Pass	
Lead (filtered)	M14-Se11684	CP	mg/L	0.096	0.094	2.0	30%	Pass	
Manganese (filtered)	M14-Se11684	CP	mg/L	0.093	0.093	1.0	30%	Pass	
Mercury (filtered)	M14-Se11684	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M14-Se11684	CP	mg/L	0.098	0.097	1.0	30%	Pass	
Zinc (filtered)	M14-Se11684	CP	mg/L	0.10	0.11	2.0	30%	Pass	
<b>Duplicate</b>									
<b>Alkali Metals</b>				Result 1	Result 2	RPD			
Calcium	M14-Se13657	NCP	mg/L	9.6	9.6	<1	30%	Pass	
Magnesium	M14-Se13657	NCP	mg/L	18	18	<1	30%	Pass	
Potassium	M14-Se13657	NCP	mg/L	3.4	3.6	5.0	30%	Pass	

<b>Duplicate</b>				Result 1	Result 2	RPD		
Total Dissolved Solids	M14-Se11686	CP	mg/L	5100	5200	3.0	30%	Pass
<b>Duplicate</b>				Result 1	Result 2	RPD		
Chloride	M14-Se11689	CP	mg/L	2800	2800	<1	30%	Pass
Sulphate (as S)	M14-Se11689	CP	mg/L	110	110	1.2	30%	Pass
<b>Duplicate</b>				Result 1	Result 2	RPD		
<b>Total Nitrogen Set (as N)</b>				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	M14-Se11690	CP	mg/L	0.98	0.94	4.0	30%	Pass
<b>Duplicate</b>				Result 1	Result 2	RPD		
<b>Alkali Metals</b>				Result 1	Result 2	RPD		
Sodium	M14-Se11693	CP	mg/L	130	130	3.0	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

**Authorised By**

Natalie Krasselt	Client Services
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)



**Glenn Jackson**

**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

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# **APPENDIX E**

## **Survey Reports**