eurofins | mgt

Certificate of Analysis

Jacobs Group (Australia) P/L VIC
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Melbourne
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Attention: **Nicolaas Unland**

Report **559951-W**
Project name BARWON WATER TASK 5
Project ID IS191000
Received Date Aug 23, 2017

Client Sample ID			**MCDONALDS**	**DAMPLANDS**	**YEODENE SWAMP U/S**	**YEODENE SWAMP D/S**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-Au28086**	**M17-Au28087**	**M17-Au28088**	**M17-Au28089**
Date Sampled			**Aug 22, 2017**	**Aug 22, 2017**	**Aug 22, 2017**	**Aug 22, 2017**
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	< 10	53	90
Ammonia (as N)	0.01	mg/L	0.12	0.09	0.18	< 0.01
Chloride	1	mg/L	120	140	160	150
Ferric Iron - Fe3+	0.05	mg/L	0.35	0.41	0.2	0.56
Ferrous Iron - Fe2+	0.05	mg/L	0.57	0.51	3.2	0.44
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	0.16	0.15	< 0.02	0.07
Phosphate total (as P)	0.05	mg/L	0.07	0.07	0.08	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	5.4	23
Sulphate (as SO4)	5	mg/L	7.2	7.8	16	68
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2	< 2
Total Sulphur (as S)	5	mg/L	< 5	< 5	5.4	23
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	72	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	72	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.18	0.18	8.5	8.4
Aluminium (filtered)	0.05	mg/L	0.17	0.16	0.23	8.0
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	0.007	0.013	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	0.004	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.4	1.4	6.2	1.2
Iron (filtered)	0.05	mg/L	0.92	0.91	3.4	1.0
Lead	0.001	mg/L	< 0.001	< 0.001	0.010	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.062	0.076	0.097	0.023

Client Sample ID			MCDONALDS	DAMPLANDS	YEODENE SWAMP U/S	YEODENE SWAMP D/S
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-Au28086	M17-Au28087	M17-Au28088	M17-Au28089
Date Sampled			Aug 22, 2017	Aug 22, 2017	Aug 22, 2017	Aug 22, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	0.050	0.065	0.098	0.023
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.003	0.011	0.025
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.007	0.025
Zinc	0.005	mg/L	< 0.005	< 0.005	0.031	0.17
Zinc (filtered)	0.005	mg/L	0.005	0.008	0.008	0.17
Alkali Metals						
Calcium	0.5	mg/L	5.9	5.8	27	5.2
Magnesium	0.5	mg/L	7.7	7.7	17	8.1
Potassium	0.5	mg/L	4.1	4.1	3.4	3.4
Sodium	0.5	mg/L	59	57	66	60

Client Sample ID			YG	LOWER BC	A3	LBC02
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-Au28090	M17-Au28091	M17-Au28092	M17-Au28093
Date Sampled			Aug 22, 2017	Aug 22, 2017	Aug 22, 2017	Aug 22, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	100	95	45	52
Ammonia (as N)	0.01	mg/L	0.02	< 0.01	0.06	< 0.01
Chloride	1	mg/L	160	220	580	290
Ferric Iron - Fe3+	0.05	mg/L	0.51	0.46	< 0.05	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	0.69	0.25	0.18	23
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	0.20	0.32	0.17	< 0.02
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.07	0.39
Sulphate (as S)	5	mg/L	28	35	55	< 5
Sulphate (as SO4)	5	mg/L	84	110	170	8.0
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2	< 2
Total Sulphur (as S)	5	mg/L	28	35	55	< 5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	190
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	190
Heavy Metals						
Aluminium	0.05	mg/L	10	11	0.29	1.7
Aluminium (filtered)	0.05	mg/L	10	11	0.20	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.036
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.031
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.001	< 0.001	0.004	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			YG	LOWER BC	A3	LBC02
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-Au28090	M17-Au28091	M17-Au28092	M17-Au28093
Date Sampled			Aug 22, 2017	Aug 22, 2017	Aug 22, 2017	Aug 22, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Copper	0.001	mg/L	< 0.001	< 0.001	0.006	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Iron	0.05	mg/L	1.4	0.77	1.2	28
Iron (filtered)	0.05	mg/L	1.2	0.71	0.19	23
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.035	0.081	0.045	0.23
Manganese (filtered)	0.005	mg/L	0.035	0.081	0.045	0.21
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.037	0.046	0.036	0.004
Nickel (filtered)	0.001	mg/L	0.037	0.046	0.036	< 0.001
Zinc	0.005	mg/L	0.23	0.25	0.059	0.020
Zinc (filtered)	0.005	mg/L	0.23	0.25	0.059	0.008
Alkali Metals						
Calcium	0.5	mg/L	6.8	16	54	82
Magnesium	0.5	mg/L	8.9	14	30	33
Potassium	0.5	mg/L	3.4	4.0	6.3	5.9
Sodium	0.5	mg/L	60	84	370	140

Client Sample ID			LBC01	PASS1	YS01	YS02
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-Au28094	M17-Au28095	M17-Au28096	M17-Au28097
Date Sampled			Aug 23, 2017	Aug 23, 2017	Aug 23, 2017	Aug 23, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	180	44	670	390
Ammonia (as N)	0.01	mg/L	15	1.0	0.22	3.4
Chloride	1	mg/L	760	1600	920	110
Ferric Iron - Fe3+	0.05	mg/L	< 0.05	< 0.05	< 0.05	10
Ferrous Iron - Fe2+	0.05	mg/L	100	28	91	210
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	< 0.02	0.21	< 0.02	< 0.1
Phosphate total (as P)	0.05	mg/L	0.63	2.3	0.08	0.25
Sulphate (as S)	5	mg/L	< 5	56	200	460
Sulphate (as SO4)	5	mg/L	< 5	170	600	1400
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2	< 2
Total Sulphur (as S)	5	mg/L	< 5	56	200	460
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	130	270	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	130	270	< 20	< 20

Client Sample ID			LBC01	PASS1	YS01	YS02
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-Au28094	M17-Au28095	M17-Au28096	M17-Au28097
Date Sampled			Aug 23, 2017	Aug 23, 2017	Aug 23, 2017	Aug 23, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	9.1	3.3	83	6.0
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	73	0.07
Arsenic	0.001	mg/L	0.031	0.028	0.007	0.004
Arsenic (filtered)	0.001	mg/L	0.021	0.009	0.006	0.003
Cadmium	0.0002	mg/L	0.0002	< 0.0002	0.0024	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	0.0024	< 0.0002
Chromium	0.001	mg/L	0.019	0.007	0.008	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Copper	0.001	mg/L	0.004	0.006	< 0.005	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.005	< 0.001
Iron	0.05	mg/L	120	45	92	230
Iron (filtered)	0.05	mg/L	100	28	91	220
Lead	0.001	mg/L	0.012	0.010	0.006	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.005	< 0.001
Manganese	0.005	mg/L	0.10	0.065	0.89	1.3
Manganese (filtered)	0.005	mg/L	0.10	0.049	0.89	1.3
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Nickel	0.001	mg/L	0.013	0.006	0.86	0.010
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.86	0.002
Zinc	0.005	mg/L	0.15	0.021	1.4	0.012
Zinc (filtered)	0.005	mg/L	0.005	< 0.005	1.4	0.006
Alkali Metals						
Calcium	0.5	mg/L	120	290	59	280
Magnesium	0.5	mg/L	73	94	77	67
Potassium	0.5	mg/L	5.9	10.0	6.8	9.1
Sodium	0.5	mg/L	160	520	290	84

Client Sample ID			YS03	YS05	YS06	YS02-SW
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-Au28098	M17-Au28099	M17-Au28100	M17-Au28101
Date Sampled			Aug 23, 2017	Aug 23, 2017	Aug 22, 2017	Aug 23, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	1900	560	< 10	160
Ammonia (as N)	0.01	mg/L	8.5	1.2	0.03	0.03
Chloride	1	mg/L	97	140	140	150
Ferric Iron - Fe3+	0.05	mg/L	100	20	0.51	0.48
Ferrous Iron - Fe2+	0.05	mg/L	1000	120	0.41	0.25
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	< 0.1	< 0.02	0.14	< 0.02
Phosphate total (as P)	0.05	mg/L	0.36	0.12	0.09	0.11
Sulphate (as S)	5	mg/L	1200	150	< 5	46
Sulphate (as SO4)	5	mg/L	3600	450	6.7	140
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2	< 2
Total Sulphur (as S)	5	mg/L	1200	150	< 5	46

Client Sample ID			YS03	YS05	YS06	YS02-SW
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-Au28098	M17-Au28099	M17-Au28100	M17-Au28101
Date Sampled			Aug 23, 2017	Aug 23, 2017	Aug 22, 2017	Aug 23, 2017
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	52	22	0.17	25
Aluminium (filtered)	0.05	mg/L	51	22	0.17	23
Arsenic	0.001	mg/L	0.013	0.017	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.01	0.013	< 0.001	0.001
Cadmium	0.0002	mg/L	< 0.002	< 0.0002	< 0.0002	0.0004
Cadmium (filtered)	0.0002	mg/L	< 0.002	< 0.0002	< 0.0002	0.0004
Chromium	0.001	mg/L	< 0.01	0.005	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.01	0.004	< 0.001	0.001
Copper	0.001	mg/L	< 0.01	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.01	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1400	140	1.0	1.3
Iron (filtered)	0.05	mg/L	1100	140	0.92	0.73
Lead	0.001	mg/L	< 0.01	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.01	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	2.5	0.055	0.029	0.037
Manganese (filtered)	0.005	mg/L	2.5	0.055	0.025	0.036
Mercury	0.0001	mg/L	< 0.001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.18	0.031	0.001	0.058
Nickel (filtered)	0.001	mg/L	0.18	0.031	< 0.001	0.058
Zinc	0.005	mg/L	0.37	0.11	< 0.005	0.45
Zinc (filtered)	0.005	mg/L	0.37	0.11	< 0.005	0.45
Alkali Metals						
Calcium	0.5	mg/L	370	3.3	5.8	5.1
Magnesium	0.5	mg/L	180	5.8	8.0	8.1
Potassium	0.5	mg/L	13	3.6	4.0	2.9
Sodium	0.5	mg/L	190	50	54	54

Client Sample ID			YS05-SW	TB1
Sample Matrix			Water	Water
Eurofins | mgt Sample No.			M17-Au28102	M17-Au28103
Date Sampled			Aug 23, 2017	Aug 22, 2017
Test/Reference	LOR	Unit		
Acidity (as CaCO3)	10	mg/L	35	34
Ammonia (as N)	0.01	mg/L	0.02	0.03
Chloride	1	mg/L	150	180
Ferric Iron - Fe3+	0.05	mg/L	0.4	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	3.0	1.5
Fluoride	0.5	mg/L	< 0.5	< 0.5
Nitrate (as N)	0.02	mg/L	0.11	0.26
Phosphate total (as P)	0.05	mg/L	0.05	0.08
Sulphate (as S)	5	mg/L	< 5	15

Client Sample ID			YS05-SW	TB1
Sample Matrix			Water	Water
Eurofins | mgt Sample No.			M17-Au28102	M17-Au28103
Date Sampled			Aug 23, 2017	Aug 22, 2017
Test/Reference	LOR	Unit		
Sulphate (as SO4)	5	mg/L	13	46
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2
Total Sulphur (as S)	5	mg/L	< 5	15
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20
Heavy Metals				
Aluminium	0.05	mg/L	0.16	< 0.05
Aluminium (filtered)	0.05	mg/L	0.16	< 0.05
Arsenic	0.001	mg/L	0.003	< 0.001
Arsenic (filtered)	0.001	mg/L	0.003	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.002
Iron	0.05	mg/L	3.6	5.7
Iron (filtered)	0.05	mg/L	3.4	1.5
Lead	0.001	mg/L	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	0.009	0.14
Manganese (filtered)	0.005	mg/L	0.008	0.14
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.008
Nickel (filtered)	0.001	mg/L	0.002	0.008
Zinc	0.005	mg/L	0.014	0.065
Zinc (filtered)	0.005	mg/L	0.014	0.065
Alkali Metals				
Calcium	0.5	mg/L	4.7	24
Magnesium	0.5	mg/L	7.5	10
Potassium	0.5	mg/L	3.8	4.0
Sodium	0.5	mg/L	62	58

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
Acidity (as CaCO3)	Melbourne	Aug 28, 2017	14 Day
- Method: LTM-INO-4210 Acidity			
Ammonia (as N)	Melbourne	Aug 28, 2017	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate (as N)	Melbourne	Aug 31, 2017	7 Day
- Method: APHA 4500-NO3 Nitrate Nitrogen by FIA			
Phosphate total (as P)	Melbourne	Aug 28, 2017	28 Day
- Method: APHA 4500-P E. Phosphorous			
Heavy Metals	Melbourne	Aug 28, 2017	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Heavy Metals (filtered)	Melbourne	Aug 28, 2017	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Mercury (filtered)	Melbourne	Aug 28, 2017	28 Day
- Method: USEPA 7470/1 Mercury			
Alkali Metals	Melbourne	Aug 28, 2017	180 Day
- Method: USEPA 6010 Alkali Metals			
Eurofins | mgt Suite B11F: Cl, SO4, Alkalinity (CO3, HCO3, OH-, Total Alkalinity), Total F			
Chloride	Melbourne	Aug 28, 2017	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Fluoride	Melbourne	Aug 28, 2017	28 Day
- Method: APHA-F-C			
Sulphate (as SO4)	Melbourne	Aug 28, 2017	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Melbourne	Aug 28, 2017	14 Day
- Method: APHA 2320 Alkalinity by Titration			
Iron (speciated)			
Ferrous Iron - Fe2+	Melbourne	Aug 28, 2017	7 Days
- Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser			
Total Sulphur Set (as S)			
Sulphate (as S)	Melbourne	Aug 28, 2017	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Sulphide (as S)	Melbourne	Aug 28, 2017	7 Day
- Method: APHA 4500-S C & D - Sulphide			
Sulphite (as S)	Melbourne	Aug 28, 2017	2 Day
- Method: LTM-INO-4240 Sulfite & Thiosulfate in Water			
Thiosulphate (as S)	Melbourne	Aug 28, 2017	2 Day
- Method: LTM-INO-4240 Sulfite & Thiosulfate in Water			
Total Sulphur (as S)	Melbourne	Aug 28, 2017	7 Day
- Method: Sum of Constituent Analytes			

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Address: PO Box 312 Flinders Lane
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Project Name: BARWON WATER TASK 5
Project ID: IS191000

Order No.:
Report #: 559951
Phone: 03 8668 3000
Fax: 03 8668 3001

Received: Aug 23, 2017 5:50 PM
Due: Aug 31, 2017
Priority: 5 Day
Contact Name: Nicolaas Unland

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail	Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Ammonia (as N)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Copper	Copper (filtered)	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Nitrate (as N)	Phosphate total (as P)	Zinc	Zinc (filtered)	Alkali Metals	Iron (speciated)	Total Sulphur Set (as S)	Eurofins | mgt Suite B11F: Cl, SO4, Alkalinity (CO3, HCO3, OH-, Total Alkalinity), Total F
Melbourne Laboratory - NATA Site # 1254 & 14271	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																													
Brisbane Laboratory - NATA Site # 20794																													
Perth Laboratory - NATA Site # 23736																													
External Laboratory																													

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																										
1	MCDONALDS	Aug 22, 2017		Water	M17-Au28086	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	DAMPLANDS	Aug 22, 2017		Water	M17-Au28087	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	YEODENE SWAMP U/S	Aug 22, 2017		Water	M17-Au28088	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	YEODENE SWAMP D/S	Aug 22, 2017		Water	M17-Au28089	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	YG	Aug 22, 2017		Water	M17-Au28090	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	LOWER BC	Aug 22, 2017		Water	M17-Au28091	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	A3	Aug 22, 2017		Water	M17-Au28092	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	LBC02	Aug 22, 2017		Water	M17-Au28093	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Ammonia (as N)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Copper	Copper (filtered)	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Nitrate (as N)	Phosphate total (as P)	Zinc	Zinc (filtered)	Alkali Metals	Iron (speciated)	Total Sulphur Set (as S)	Eurofins | mgt Suite B11F: Cl, SO4, Alkalinity (CO3, HCO3, OH-, Total Alkalinity), Total F
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																																	
Brisbane Laboratory - NATA Site # 20794																																	
Perth Laboratory - NATA Site # 23736																																	
9	LBC01	Aug 23, 2017		Water	M17-Au28094	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	PASS1	Aug 23, 2017		Water	M17-Au28095	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	YS01	Aug 23, 2017		Water	M17-Au28096	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	YS02	Aug 23, 2017		Water	M17-Au28097	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	YS03	Aug 23, 2017		Water	M17-Au28098	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	YS05	Aug 23, 2017		Water	M17-Au28099	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	YS06	Aug 22, 2017		Water	M17-Au28100	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	YS02-SW	Aug 23, 2017		Water	M17-Au28101	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	YS05-SW	Aug 23, 2017		Water	M17-Au28102	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	TB1	Aug 22, 2017		Water	M17-Au28103	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18

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. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. 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

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

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, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene 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 Aroclor 1260 in Matrix Spikes and LCS.
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 RPDs 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
Method Blank							
Acidity (as CaCO3)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Fluoride	mg/L	< 0.5			0.5	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Sulphite (as S)	mg/L	< 0.5			0.5	Pass	
Thiosulphate (as S)	mg/L	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
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	
LCS - % Recovery							
Acidity (as CaCO3)	%	104			70-130	Pass	
Ammonia (as N)	%	100			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chloride	%	114			70-130	Pass	
Ferrous Iron - Fe2+	%	101			70-130	Pass	
Fluoride	%	90			70-130	Pass	
Nitrate (as N)	%	96			70-130	Pass	
Phosphate total (as P)	%	95			70-130	Pass	
Sulphate (as S)	%	114			70-130	Pass	
Sulphate (as SO4)	%	114			70-130	Pass	
Sulphide (as S)	%	102			70-130	Pass	
Thiosulphate (as S)	%	100			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	%	83			70-130	Pass	
Carbonate Alkalinity (as CaCO3)	%	97			70-130	Pass	
Total Alkalinity (as CaCO3)	%	99			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	120			80-120	Pass	
Aluminium (filtered)	%	120			80-120	Pass	
Arsenic	%	104			80-120	Pass	
Arsenic (filtered)	%	104			80-120	Pass	
Cadmium	%	105			80-120	Pass	
Cadmium (filtered)	%	105			80-120	Pass	
Chromium	%	104			80-120	Pass	
Chromium (filtered)	%	104			80-120	Pass	
Copper	%	105			80-120	Pass	
Copper (filtered)	%	105			80-120	Pass	
Iron	%	105			80-120	Pass	
Iron (filtered)	%	105			80-120	Pass	
Lead	%	104			80-120	Pass	
Lead (filtered)	%	104			80-120	Pass	
Manganese	%	105			80-120	Pass	
Manganese (filtered)	%	105			80-120	Pass	
Mercury	%	92			75-125	Pass	
Mercury (filtered)	%	92			70-130	Pass	
Nickel	%	105			80-120	Pass	
Nickel (filtered)	%	105			80-120	Pass	
Zinc	%	106			80-120	Pass	
Zinc (filtered)	%	106			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	99			70-130	Pass	
Magnesium	%	112			70-130	Pass	
Potassium	%	93			70-130	Pass	
Sodium	%	91			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Sulphate (as S)	M17-Au28188	NCP	%	105			70-130	Pass	
Sulphate (as SO4)	M17-Au28188	NCP	%	105			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO3)	M17-Au27506	NCP	%	85			70-130	Pass	
Total Alkalinity (as CaCO3)	M17-Au27506	NCP	%	113			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heavy Metals				Result 1					
Aluminium	S17-Au29598	NCP	%	114			75-125	Pass	
Aluminium (filtered)	M17-Au28086	CP	%	108			75-125	Pass	
Arsenic (filtered)	M17-Au28086	CP	%	95			70-130	Pass	
Cadmium (filtered)	M17-Au28086	CP	%	94			70-130	Pass	
Chromium (filtered)	M17-Au28086	CP	%	92			70-130	Pass	
Copper (filtered)	M17-Au28086	CP	%	93			70-130	Pass	
Lead (filtered)	M17-Au28086	CP	%	94			70-130	Pass	
Manganese (filtered)	M17-Au28086	CP	%	88			70-130	Pass	
Mercury (filtered)	M17-Au28086	CP	%	87			70-130	Pass	
Nickel (filtered)	M17-Au28086	CP	%	92			70-130	Pass	
Zinc (filtered)	M17-Au28086	CP	%	99			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Au31093	NCP	%	101			70-130	Pass	
Magnesium	M17-Au31093	NCP	%	92			70-130	Pass	
Potassium	M17-Au28001	NCP	%	100			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Au28087	CP	%	105			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Au28091	CP	%	103			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO3)	P17-Au30755	NCP	%	78			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Au28096	CP	%	98			70-130	Pass	
Nitrate (as N)	M17-Au28096	CP	%	75			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M17-Au28096	CP	%	109			70-130	Pass	
Cadmium (filtered)	M17-Au28096	CP	%	100			70-130	Pass	
Chromium (filtered)	M17-Au28096	CP	%	104			70-130	Pass	
Copper (filtered)	M17-Au28096	CP	%	99			70-130	Pass	
Lead (filtered)	M17-Au28096	CP	%	103			70-130	Pass	
Manganese (filtered)	M17-Au28096	CP	%	38			70-130	Fail	Q08
Mercury (filtered)	M17-Au28096	CP	%	98			70-130	Pass	
Nickel (filtered)	M17-Au28096	CP	%	36			70-130	Fail	Q08
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M17-Au28098	CP	%	94			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Sodium	M17-Au28099	CP	%	104			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ferrous Iron - Fe2+	M17-Au28101	CP	%	94			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M17-Au28101	CP	%	97			75-125	Pass	
Cadmium	M17-Au28101	CP	%	94			75-125	Pass	
Chromium	M17-Au28101	CP	%	92			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	M17-Au28101	CP	%	93			75-125	Pass	
Lead	M17-Au28101	CP	%	94			75-125	Pass	
Manganese	M17-Au28101	CP	%	92			75-125	Pass	
Mercury	M17-Au28101	CP	%	90			70-130	Pass	
Nickel	M17-Au28101	CP	%	86			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M17-Au28086	CP	mg/L	< 10	< 10	<1	30%	Pass	
Sulphite (as S)	M17-Au35272	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Thiosulphate (as S)	M17-Au35272	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M17-Au28086	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M17-Au28086	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M17-Au28086	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M17-Au28086	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M17-Au28086	CP	mg/L	0.17	0.18	5.0	30%	Pass	
Arsenic (filtered)	M17-Au28086	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M17-Au28086	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M17-Au28086	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M17-Au28086	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M17-Au28086	CP	mg/L	0.92	0.94	2.0	30%	Pass	
Lead (filtered)	M17-Au28086	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M17-Au28086	CP	mg/L	0.050	0.049	1.0	30%	Pass	
Mercury (filtered)	M17-Au28086	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M17-Au28086	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M17-Au28086	CP	mg/L	0.005	0.006	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M17-Au28087	CP	mg/L	140	130	3.7	30%	Pass	
Sulphate (as S)	M17-Au28087	CP	mg/L	< 5	< 5	<1	30%	Pass	
Sulphate (as SO4)	M17-Au28087	CP	mg/L	7.8	7.4	5.7	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M17-Au28088	CP	mg/L	0.08	0.08	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M17-Au28091	CP	mg/L	220	220	<1	30%	Pass	
Sulphate (as S)	M17-Au28091	CP	mg/L	35	35	<1	30%	Pass	
Sulphate (as SO4)	M17-Au28091	CP	mg/L	110	110	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ferrous Iron - Fe2+	M17-Au28094	CP	mg/L	100	100	1.4	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Au28096	CP	mg/L	0.22	0.23	4.0	30%	Pass	
Fluoride	M17-Au28096	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Nitrate (as N)	M17-Au28096	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M17-Au28096	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M17-Au28096	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M17-Au28096	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M17-Au28096	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M17-Au28096	CP	mg/L	73	78	7.0	30%	Pass	
Arsenic (filtered)	M17-Au28096	CP	mg/L	0.006	0.006	2.0	30%	Pass	
Cadmium (filtered)	M17-Au28096	CP	mg/L	0.0024	0.0024	<1	30%	Pass	
Chromium (filtered)	M17-Au28096	CP	mg/L	0.005	0.006	2.0	30%	Pass	
Copper (filtered)	M17-Au28096	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Iron (filtered)	M17-Au28096	CP	mg/L	91	88	8.0	30%	Pass	
Lead (filtered)	M17-Au28096	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M17-Au28096	CP	mg/L	0.89	0.88	1.0	30%	Pass	
Mercury (filtered)	M17-Au28096	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Nickel (filtered)	M17-Au28096	CP	mg/L	0.86	0.85	1.0	30%	Pass	
Zinc (filtered)	M17-Au28096	CP	mg/L	1.4	1.3	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M17-Au28098	CP	mg/L	1900	1900	1.0	30%	Pass	
Sulphide (as S)	M17-Au28098	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-Au28099	CP	mg/L	3.3	3.3	<1	30%	Pass	
Magnesium	M17-Au28099	CP	mg/L	5.8	5.8	1.0	30%	Pass	
Potassium	M17-Au28099	CP	mg/L	3.6	3.7	3.0	30%	Pass	
Sodium	M17-Au28099	CP	mg/L	50	50	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ferrous Iron - Fe2+	M17-Au28100	CP	mg/L	0.41	0.40	1.9	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Au28101	CP	mg/L	25	25	2.0	30%	Pass	
Arsenic	M17-Au28101	CP	mg/L	0.001	0.001	3.0	30%	Pass	
Cadmium	M17-Au28101	CP	mg/L	0.0004	0.0004	3.0	30%	Pass	
Chromium	M17-Au28101	CP	mg/L	0.002	0.003	6.0	30%	Pass	
Copper	M17-Au28101	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Au28101	CP	mg/L	1.3	1.4	9.0	30%	Pass	
Lead	M17-Au28101	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Au28101	CP	mg/L	0.037	0.037	<1	30%	Pass	
Mercury	M17-Au28101	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Au28101	CP	mg/L	0.058	0.059	2.0	30%	Pass	
Zinc	M17-Au28101	CP	mg/L	0.45	0.45	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Sulphide (as S)	M17-Au28103	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

eurofins | mgt

Certificate of Analysis

Jacobs Group (Australia) P/L VIC
PO Box 312 Flinders Lane
Melbourne
VIC 8009

NATA Accredited
Accreditation Number 1261
Site Number 20794

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

Attention: **Nicolaas Unland**

Report **541765-S**
Project name BARWON WATER TASK 5
Project ID IS191000
Received Date Apr 10, 2017

Client Sample ID			**LBC01_0.5**	**LBC01_1.5**	**LBC01_S1**	**LBC01_S2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07250**	**B17-Ap07251**	**B17-Ap07253**	**B17-Ap07254**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	-	-	110	600
% Moisture	1	%	28	61	28	32
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	4.7	4.6	-	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.4	2.4	-	-
Reaction Ratings*[S05]		comment	4.0	4.0	-	-
Chromium Suite						
pH-KCL	0.1	pH Units	4.1	4.1	-	-
Acid trail - Titratable Actual Acidity	2	mol H+/t	250	260	-	-
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.40	0.42	-	-
Chromium Reducible Sulfur[S04]	0.005	% S	0.013	0.023	-	-
Chromium Reducible Sulfur -acidity units	3	mol H+/t	8.0	14	-	-
Sulfur - KCl Extractable	0.02	% S	0.03	0.02	-	-
HCl Extractable Sulfur	0.02	% S	0.05	0.04	-	-
Net Acid soluble sulfur	0.02	% S	0.02	0.02	-	-
Net Acid soluble sulfur - acidity units	10	mol H+/t	< 10	< 10	-	-
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	< 0.02	< 0.02	-	-
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	-	-
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	-	-
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	-	-
ANC Fineness Factor		factor	1.5	1.5	-	-
Net Acidity (Sulfur Units)	0.02	% S	0.43	0.46	-	-
Net Acidity (Acidity Units)	10	mol H+/t	270	280	-	-
Liming Rate[S01]	1	kg CaCO3/t	20	21	-	-
Extraneous Material						
<2mm Fraction	0.005	g	45	52	-	-
>2mm Fraction	0.005	g	0.30	0.93	-	-
Analysed Material	0.1	%	99	98	-	-
Extraneous Material	0.1	%	0.7	1.8	-	-

Client Sample ID			LBC02_0.5	LBC02_1.0	LBC01_3.0	LBC02_3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B17-Ap07255	B17-Ap07256	B17-Ap07258	B17-Ap07259
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
% Moisture	1	%	28	44	63	25
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	5.1	4.5	6.0	6.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.0	3.0	2.8	3.6
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0
Chromium Suite						
pH-KCL	0.1	pH Units	4.4	4.0	4.4	4.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	150	200	120	28
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.24	0.33	0.19	0.04
Chromium Reducible Sulfur[S04]	0.005	% S	0.006	0.009	0.30	0.008
Chromium Reducible Sulfur -acidity units	3	mol H+/t	4.0	6.0	190	5.0
Sulfur - KCl Extractable	0.02	% S	< 0.02	0.03	< 0.02	n/a
HCl Extractable Sulfur	0.02	% S	0.03	0.04	0.02	n/a
Net Acid soluble sulfur	0.02	% S	0.03	< 0.02	0.02	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	13	< 10	12	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	0.02	< 0.02	0.02	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	n/a	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.27	0.34	0.51	0.05
Net Acidity (Acidity Units)	10	mol H+/t	170	210	320	33
Liming Rate[S01]	1	kg CaCO3/t	13	16	24	2.5
Extraneous Material						
<2mm Fraction	0.005	g	110	70	64	180
>2mm Fraction	0.005	g	< 0.005	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	100	100	100	100
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			YS01_1.0	YS04_0.5	YS04_2.0	YS04_3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B17-Ap07260	B17-Ap07261	B17-Ap07263	B17-Ap07265
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
% Moisture	1	%	11	9.6	4.8	7.6
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	3.9	4.3	4.3	4.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.1	2.6	3.6	3.4
Reaction Ratings*[S05]		comment	4.0	3.0	1.0	1.0
Chromium Suite						
pH-KCL	0.1	pH Units	4.5	4.4	4.8	5.1
Acid trail - Titratable Actual Acidity	2	mol H+/t	39	49	13	7.3
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.06	0.08	0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	0.007	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	4.0	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	< 0.02	n/a	n/a

Client Sample ID			YS01_1.0	YS04_0.5	YS04_2.0	YS04_3.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07260**	**B17-Ap07261**	**B17-Ap07263**	**B17-Ap07265**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
Chromium Suite						
HCl Extractable Sulfur	0.02	% S	n/a	< 0.02	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	< 0.02	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	< 10	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	< 0.02	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	n/a	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.06	0.09	0.02	< 0.02
Net Acidity (Acidity Units)	10	mol H+/t	39	54	13	< 10
Liming Rate[S01]	1	kg CaCO3/t	2.9	4.0	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	110	25	140	100
>2mm Fraction	0.005	g	0.39	130	0.76	2.9
Analysed Material	0.1	%	100	17	99	97
Extraneous Material	0.1	%	0.4	83	0.5	2.7

Client Sample ID			YS05_0.5	YS05_2.0	YS05_3.0	YS06_1.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07266**	**B17-Ap07268**	**B17-Ap07270**	**B17-Ap07271**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
% Moisture	1	%	27	31	18	25
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	3.6	4.1	4.2	5.8
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	1.6	2.3	2.3	3.2
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0
Chromium Suite						
pH-KCL	0.1	pH Units	2.7	4.0	4.4	4.4
Acid trail - Titratable Actual Acidity	2	mol H+/t	570	110	48	81
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.92	0.18	0.08	0.13
Chromium Reducible Sulfur[S04]	0.005	% S	0.050	0.19	0.071	0.016
Chromium Reducible Sulfur -acidity units	3	mol H+/t	31	120	44	10
Sulfur - KCl Extractable	0.02	% S	0.05	0.13	0.06	< 0.02
HCl Extractable Sulfur	0.02	% S	0.13	0.12	0.06	< 0.02
Net Acid soluble sulfur	0.02	% S	0.08	< 0.02	< 0.02	< 0.02
Net Acid soluble sulfur - acidity units	10	mol H+/t	37	< 10	< 10	< 10
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	0.06	< 0.02	< 0.02	< 0.02
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	n/a	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	1.0	0.36	0.15	0.15
Net Acidity (Acidity Units)	10	mol H+/t	640	230	93	91
Liming Rate[S01]	1	kg CaCO3/t	48	17	7.0	6.8

Client Sample ID			YS05_0.5	YS05_2.0	YS05_3.0	YS06_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B17-Ap07266	B17-Ap07268	B17-Ap07270	B17-Ap07271
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	46	130	97	80
>2mm Fraction	0.005	g	< 0.005	0.60	0.60	< 0.005
Analysed Material	0.1	%	100	100	99	100
Extraneous Material	0.1	%	< 0.1	0.5	0.6	< 0.1

Client Sample ID			YS06_1.5	YS06_2.5	YS01_0.5	YS01_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B17-Ap07272	B17-Ap07274	B17-Ap07275	B17-Ap07276
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
% Moisture	1	%	13	13	25	17
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	5.0	5.3	4.6	3.9
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	2.0	3.5	2.9	2.6
Reaction Ratings*[S05]		comment	3.0	1.0	4.0	2.0
Chromium Suite						
pH-KCL	0.1	pH Units	4.4	5.3	4.0	4.2
Acid trail - Titratable Actual Acidity	2	mol H+/t	44	3.7	270	89
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.07	< 0.02	0.43	0.14
Chromium Reducible Sulfur[S04]	0.005	% S	0.035	< 0.005	0.008	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	22	< 3	5.0	< 3
Sulfur - KCl Extractable	0.02	% S	< 0.02	n/a	0.03	0.06
HCl Extractable Sulfur	0.02	% S	< 0.02	n/a	0.04	0.05
Net Acid soluble sulfur	0.02	% S	< 0.02	n/a	< 0.02	< 0.02
Net Acid soluble sulfur - acidity units	10	mol H+/t	< 10	n/a	< 10	< 10
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	< 0.02	n/a	< 0.02	< 0.02
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	n/a	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.10	< 0.02	0.45	0.14
Net Acidity (Acidity Units)	10	mol H+/t	65	< 10	280	89
Liming Rate[S01]	1	kg CaCO3/t	4.9	< 1	21	6.7
Extraneous Material						
<2mm Fraction	0.005	g	110	120	76	97
>2mm Fraction	0.005	g	0.99	7.2	< 0.005	1.8
Analysed Material	0.1	%	99	94	100	98
Extraneous Material	0.1	%	0.9	5.9	< 0.1	1.8

Client Sample ID			YS01_3.0	YS02_1.0	YS02_2.0	YS02_3.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07279**	**B17-Ap07280**	**B17-Ap07282**	**B17-Ap07284**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
% Moisture	1	%	17	79	78	64
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	4.1	3.4	4.5	5.9
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.1	1.6	1.5	1.8
Reaction Ratings*[S05]		comment	2.0	3.0	4.0	4.0
Chromium Suite						
pH-KCL	0.1	pH Units	4.6	3.3	4.2	5.1
Acid trail - Titratable Actual Acidity	2	mol H+/t	28	910	470	81
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.05	1.5	0.76	0.13
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	0.88	4.7	1.9
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	550	2900	1200
Sulfur - KCl Extractable	0.02	% S	n/a	0.29	0.65	n/a
HCl Extractable Sulfur	0.02	% S	n/a	0.30	0.60	n/a
Net Acid soluble sulfur	0.02	% S	n/a	< 0.02	< 0.02	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	< 10	< 10	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	< 0.02	< 0.02	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	n/a	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.05	2.4	5.4	2.0
Net Acidity (Acidity Units)	10	mol H+/t	28	1500	3400	1200
Liming Rate[S01]	1	kg CaCO3/t	2.1	110	250	93
Extraneous Material						
<2mm Fraction	0.005	g	120	18	14	54
>2mm Fraction	0.005	g	< 0.005	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	100	100	100	100
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			YS03_0.5	YS03_1.0	YS03_2.0	YS03_3.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07285**	**B17-Ap07286**	**B17-Ap07288**	**B17-Ap07290**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
% Moisture	1	%	20	44	73	72
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	4.8	3.9	5.9	5.9
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.6	2.7	1.9	2.2
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0
Chromium Suite						
pH-KCL	0.1	pH Units	4.4	3.7	4.8	4.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	110	240	72	78
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.17	0.39	0.12	0.13
Chromium Reducible Sulfur[S04]	0.005	% S	0.005	0.036	0.37	0.24
Chromium Reducible Sulfur -acidity units	3	mol H+/t	3.0	23	230	150
Sulfur - KCl Extractable	0.02	% S	0.02	0.05	n/a	n/a

Client Sample ID			YS03_0.5	YS03_1.0	YS03_2.0	YS03_3.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07285**	**B17-Ap07286**	**B17-Ap07288**	**B17-Ap07290**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
Chromium Suite						
HCl Extractable Sulfur	0.02	% S	0.06	0.14	n/a	n/a
Net Acid soluble sulfur	0.02	% S	0.03	0.09	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	16	43	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	0.03	0.07	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	n/a	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.20	0.49	0.49	0.36
Net Acidity (Acidity Units)	10	mol H+/t	130	310	300	230
Liming Rate[S01]	1	kg CaCO3/t	9.4	23	23	17
Extraneous Material						
<2mm Fraction	0.005	g	65	32	80	93
>2mm Fraction	0.005	g	< 0.005	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	100	100	100	100
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			YS05_1.0	YS06_0.5	YS06_3.0	YS04_1.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07291**	**B17-Ap07292**	**B17-Ap07293**	**B17-Ap07392**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
% Moisture	1	%	64	7.6	17	10
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	2.8	5.6	5.2	4.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	1.6	2.1	3.8	3.4
Reaction Ratings*[S05]		comment	4.0	3.0	2.0	1.0
Chromium Suite						
pH-KCL	0.1	pH Units	3.0	4.7	5.3	4.3
Acid trail - Titratable Actual Acidity	2	mol H+/t	580	21	5.5	59
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	0.93	0.03	< 0.02	0.09
Chromium Reducible Sulfur[S04]	0.005	% S	14	0.007	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	9000	4.0	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	0.47	n/a	n/a	< 0.02
HCl Extractable Sulfur	0.02	% S	0.47	n/a	n/a	0.02
Net Acid soluble sulfur	0.02	% S	< 0.02	n/a	n/a	0.02
Net Acid soluble sulfur - acidity units	10	mol H+/t	< 10	n/a	n/a	< 10
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	< 0.02	n/a	n/a	0.02
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - acidity (ANCbt)	2	mol H+/t	n/a	n/a	n/a	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	n/a	n/a	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	15	0.04	< 0.02	0.11
Net Acidity (Acidity Units)	10	mol H+/t	9600	25	< 10	68
Liming Rate[S01]	1	kg CaCO3/t	720	1.9	< 1	5.1

Client Sample ID			YS05_1.0	YS06_0.5	YS06_3.0	YS04_1.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Ap07291**	**B17-Ap07292**	**B17-Ap07293**	**B17-Ap07392**
Date Sampled			**Not Provided**	**Not Provided**	**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	47	87	140	110
>2mm Fraction	0.005	g	< 0.005	5.2	2.2	5.4
Analysed Material	0.1	%	100	94	98	95
Extraneous Material	0.1	%	< 0.1	5.6	1.5	4.6

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
Conductivity (1:5 aqueous extract at 25°C)	Melbourne	Apr 12, 2017	7 Day
- Method: LTM-INO-4030			
Acid Sulfate Soils Field pH Test	Brisbane	Apr 11, 2017	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
% Moisture	Brisbane	Apr 11, 2017	14 Day
- Method: LTM-GEN-7080 Moisture			
Chromium Suite			
Chromium Suite	Brisbane	Apr 11, 2017	6 Week
- Method: LTM-GEN-7070			
Extraneous Material	Brisbane	Apr 11, 2017	6 Week
- Method: LTM-GEN-7050/7070			

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Company Name: Jacobs Group (Australia) P/L VIC
Address: PO Box 312 Flinders Lane
Melbourne
VIC 8009

Project Name: BARWON WATER TASK 5
Project ID: IS191000

Order No.:
Report #: 541765
Phone: 03 8668 3000
Fax: 03 8668 3001

Received: Apr 10, 2017 9:00 AM
Due: Apr 19, 2017
Priority: 5 Day
Contact Name: Nicolaas Unland

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						Conductivity (1:5 aqueous extract at 25°C)	HOLD	Acid Sulfate Soils Field pH Test	Chromium Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271						X				X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794							X	X	X	X	X
Perth Laboratory - NATA Site # 18217											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	LBC01_0.5	Not Provided		Soil	B17-Ap07250			X	X		X
2	LBC01_1.5	Not Provided		Soil	B17-Ap07251			X	X		X
3	LBC01_2.0	Not Provided		Soil	B17-Ap07252		X				
4	LBC01_S1	Not Provided		Soil	B17-Ap07253	X				X	
5	LBC01_S2	Not Provided		Soil	B17-Ap07254	X				X	
6	LBC02_0.5	Not Provided		Soil	B17-Ap07255			X	X		X
7	LBC02_1.0	Not Provided		Soil	B17-Ap07256			X	X		X
8	LBC02_2.0	Not Provided		Soil	B17-Ap07257		X				
9	LBC01_3.0	Not Provided		Soil	B17-Ap07258			X	X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271						X				X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794							X	X	X	X	X
Perth Laboratory - NATA Site # 18217											
10	LBC02_3.0	Not Provided		Soil	B17-Ap07259			X	X		X
11	YS01_1.0	Not Provided		Soil	B17-Ap07260			X	X		X
12	YS04_0.5	Not Provided		Soil	B17-Ap07261			X	X		X
13	YS04_1.5	Not Provided		Soil	B17-Ap07262		X				
14	YS04_2.0	Not Provided		Soil	B17-Ap07263			X	X		X
15	YS04_2.5	Not Provided		Soil	B17-Ap07264		X				
16	YS04_3.0	Not Provided		Soil	B17-Ap07265			X	X		X
17	YS05_0.5	Not Provided		Soil	B17-Ap07266			X	X		X
18	YS05_1.5	Not Provided		Soil	B17-Ap07267		X				
19	YS05_2.0	Not Provided		Soil	B17-Ap07268			X	X		X
20	YS05_2.5	Not Provided		Soil	B17-Ap07269		X				
21	YS05_3.0	Not Provided		Soil	B17-Ap07270			X	X		X

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Sample Detail						Conductivity (1:5 aqueous extract at 25°C)	HOLD	Acid Sulfate Soils Field pH Test	Chromium Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271						X				X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794							X	X	X	X	X
Perth Laboratory - NATA Site # 18217											
22	YS06_1.0	Not Provided		Soil	B17-Ap07271			X	X		X
23	YS06_1.5	Not Provided		Soil	B17-Ap07272			X	X		X
24	YS06_2.0	Not Provided		Soil	B17-Ap07273		X				
25	YS06_2.5	Not Provided		Soil	B17-Ap07274			X	X		X
26	YS01_0.5	Not Provided		Soil	B17-Ap07275			X	X		X
27	YS01_1.5	Not Provided		Soil	B17-Ap07276			X	X		X
28	YS01_2.0	Not Provided		Soil	B17-Ap07277		X				
29	YS01_2.5	Not Provided		Soil	B17-Ap07278		X				
30	YS01_3.0	Not Provided		Soil	B17-Ap07279			X	X		X
31	YS02_1.0	Not Provided		Soil	B17-Ap07280			X	X		X
32	YS02_1.5	Not Provided		Soil	B17-Ap07281		X				
33	YS02_2.0	Not Provided		Soil	B17-Ap07282			X	X		X

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Sample Detail						Conductivity (1:5 aqueous extract at 25°C)	HOLD	Acid Sulfate Soils Field pH Test	Chromium Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271						X				X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794							X	X	X	X	X
Perth Laboratory - NATA Site # 18217											
34	YS02_2.5	Not Provided		Soil	B17-Ap07283		X				
35	YS02_3.0	Not Provided		Soil	B17-Ap07284			X	X		X
36	YS03_0.5	Not Provided		Soil	B17-Ap07285			X	X		X
37	YS03_1.0	Not Provided		Soil	B17-Ap07286			X	X		X
38	YS03_1.5	Not Provided		Soil	B17-Ap07287		X				
39	YS03_2.0	Not Provided		Soil	B17-Ap07288			X	X		X
40	YS03_2.5	Not Provided		Soil	B17-Ap07289		X				
41	YS03_3.0	Not Provided		Soil	B17-Ap07290			X	X		X
42	YS05_1.0	Not Provided		Soil	B17-Ap07291			X	X		X
43	YS06_0.5	Not Provided		Soil	B17-Ap07292			X	X		X
44	YS06_3.0	Not Provided		Soil	B17-Ap07293			X	X		X
45	YS04_1.0	Not Provided		Soil	B17-Ap07392			X	X		X

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Sample Detail	Conductivity (1:5 aqueous extract at 25°C)	HOLD	Acid Sulfate Soils Field pH Test	Chromium Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271	X				X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794		X	X	X	X	X
Perth Laboratory - NATA Site # 18217						
Test Counts	2	13	30	30	32	32

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

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

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 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, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene 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 Aroclor 1260 in Matrix Spikes and LCS.
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 RPDs 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
LCS - % Recovery							
Chromium Suite							
Chromium Reducible Sulfur	%	95			70-130	Pass	
Acid Neutralising Capacity (ANCbt)	%	94			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	B17-Ap07250	CP	pH Units	4.7	4.7	pass	30%	Pass	
Reaction Ratings*	B17-Ap07250	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B17-Ap07260	CP	pH Units	4.5	4.5	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B17-Ap07260	CP	mol H+/t	39	38	2.0	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B17-Ap07260	CP	% pyrite S	0.06	0.06	2.0	30%	Pass	
Chromium Reducible Sulfur	B17-Ap07260	CP	% S	< 0.005	< 0.005	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B17-Ap07260	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B17-Ap07260	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B17-Ap07260	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B17-Ap07260	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B17-Ap07260	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B17-Ap07260	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B17-Ap07260	CP	%CaCO3	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B17-Ap07260	CP	% S	n/a	n/a	n/a	30%	Pass	
ANC Fineness Factor	B17-Ap07260	CP	factor	1.5	1.5	<1	30%	Pass	
Net Acidity (Sulfur Units)	B17-Ap07260	CP	% S	0.06	0.06	n/a	30%	Pass	
Net Acidity (Acidity Units)	B17-Ap07260	CP	mol H+/t	39	38	n/a	30%	Pass	
Liming Rate	B17-Ap07260	CP	kg CaCO3/t	2.9	2.9	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B17-Ap07263	CP	%	4.8	5.2	8.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	B17-Ap07266	CP	pH Units	3.6	3.5	pass	30%	Pass	
Reaction Ratings*	B17-Ap07266	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B17-Ap07275	CP	pH Units	4.0	4.0	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B17-Ap07275	CP	mol H+/t	270	270	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B17-Ap07275	CP	% pyrite S	0.43	0.44	1.0	30%	Pass	
Chromium Reducible Sulfur	B17-Ap07275	CP	% S	0.008	0.006	17	30%	Pass	
Chromium Reducible Sulfur -acidity units	B17-Ap07275	CP	mol H+/t	5.0	4.0	17	30%	Pass	
Sulfur - KCl Extractable	B17-Ap07275	CP	% S	0.03	0.03	15	30%	Pass	
HCl Extractable Sulfur	B17-Ap07275	CP	% S	0.04	0.04	1.0	30%	Pass	
Net Acid soluble sulfur	B17-Ap07275	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
Net Acid soluble sulfur - acidity units	B17-Ap07275	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B17-Ap07275	CP	% S	< 0.02	< 0.02	<1	30%	Pass	

Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
Acid Neutralising Capacity (ANCbt)	B17-Ap07275	CP	%CaCO3	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B17-Ap07275	CP	% S	n/a	n/a	n/a	30%	Pass	
ANC Fineness Factor	B17-Ap07275	CP	factor	1.5	1.5	<1	30%	Pass	
Net Acidity (Sulfur Units)	B17-Ap07275	CP	% S	0.45	0.45	n/a	30%	Pass	
Net Acidity (Acidity Units)	B17-Ap07275	CP	mol H+/t	280	280	n/a	30%	Pass	
Liming Rate	B17-Ap07275	CP	kg CaCO3/t	21	21	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B17-Ap07279	CP	%	17	19	8.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	B17-Ap07282	CP	pH Units	4.5	4.3	pass	30%	Pass	
Reaction Ratings*	B17-Ap07282	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B17-Ap07291	CP	pH Units	3.0	3.0	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B17-Ap07291	CP	mol H+/t	580	550	4.6	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B17-Ap07291	CP	% pyrite S	0.93	0.89	5.0	30%	Pass	
Chromium Reducible Sulfur	B17-Ap07291	CP	% S	14	14	5.0	30%	Pass	
Chromium Reducible Sulfur -acidity units	B17-Ap07291	CP	mol H+/t	9000	8600	5.0	30%	Pass	
Sulfur - KCl Extractable	B17-Ap07291	CP	% S	0.47	0.46	3.0	30%	Pass	
HCl Extractable Sulfur	B17-Ap07291	CP	% S	0.47	0.42	12	30%	Pass	
Net Acid soluble sulfur	B17-Ap07291	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
Net Acid soluble sulfur - acidity units	B17-Ap07291	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B17-Ap07291	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B17-Ap07291	CP	%CaCO3	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B17-Ap07291	CP	% S	n/a	n/a	n/a	30%	Pass	
ANC Fineness Factor	B17-Ap07291	CP	factor	1.5	1.5	<1	30%	Pass	
Net Acidity (Sulfur Units)	B17-Ap07291	CP	% S	15	15	n/a	30%	Pass	
Net Acidity (Acidity Units)	B17-Ap07291	CP	mol H+/t	9600	9100	n/a	30%	Pass	
Liming Rate	B17-Ap07291	CP	kg CaCO3/t	720	680	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B17-Ap07293	CP	%	17	16	8.0	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

Qualifier Codes/Comments

Code	Description
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Onur Mehmet	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Bryan Wilson	Senior Analyst-Metal (QLD)
Huong Le	Senior Analyst-Inorganic (VIC)
Jonathon Angell	Senior Analyst-Inorganic (QLD)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

eurofins | mgt

Certificate of Analysis

Jacobs Group (Australia) P/L VIC
PO Box 312 Flinders Lane
Melbourne
VIC 8009

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Andrew Nelson**

Report **545553-W**
Project name BARWON DOWNS HYDROGEN LOGICAL ASSESSMENT
Received Date May 10, 2017

Client Sample ID			**A3**	**YGS**	**SUS**	**YS06**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-My09638**	**M17-My09639**	**M17-My09640**	**M17-My09641**
Date Sampled			**May 04, 2017**	**May 04, 2017**	**May 04, 2017**	**May 04, 2017**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	< 0.01	0.31	0.02	0.06
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	< 5	< 5	< 5
Chemical Oxygen Demand (COD)	25	mg/L	< 25	< 25	25	45
Chloride	1	mg/L	600	140	96	110
Dissolved Organic Carbon	5	mg/L	< 5	9.1	8.2	13
Ferric Iron - Fe3+	0.05	mg/L	0.06	6	0.17	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	5.7	0.30	[Q18]1.7
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	0.17	< 0.05	0.06	< 0.05
Nitrate (as N)	0.02	mg/L	0.17	< 0.02	0.06	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.4	0.3	0.4
Phosphate total (as P)	0.05	mg/L	0.08	0.14	0.05	< 0.05
Sulphate (as S)	5	mg/L	55	130	< 5	6.5
Sulphate (as SO4)	5	mg/L	170	390	5.8	19
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2	< 2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.7	0.3	0.5
Total Nitrogen (as N)	0.2	mg/L	< 0.2	0.7	0.4	0.5
Total Organic Carbon	5	mg/L	< 5	9.5	9.8	14
Total Sulphur (as S)	5	mg/L	55	130	< 5	6.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	31	50
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	31	50
Heavy Metals						
Aluminium	0.05	mg/L	0.18	[R05]36	< 0.05	0.40
Aluminium (filtered)	0.05	mg/L	0.18	37	< 0.05	0.29
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.001
Cadmium	0.0002	mg/L	< 0.0002	0.0007	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	0.0006	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	0.002	0.001	0.001
Chromium (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001

Client Sample ID			A3	YGS	SUS	YS06
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-My09638**	**M17-My09639**	**M17-My09640**	**M17-My09641**
Date Sampled			**May 04, 2017**	**May 04, 2017**	**May 04, 2017**	**May 04, 2017**
Test/Reference	LOR	Unit				
Heavy Metals						
Copper	0.001	mg/L	0.010	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.009	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.06	12	0.47	[Q18]1.4
Iron (filtered)	0.05	mg/L	< 0.05	12	0.37	0.63
Lead	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.060	0.17	0.016	0.066
Manganese (filtered)	0.005	mg/L	0.060	0.17	0.015	0.062
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.063	0.16	0.001	0.004
Nickel (filtered)	0.001	mg/L	0.061	0.16	< 0.001	0.004
Zinc	0.005	mg/L	0.11	0.84	0.005	[R05]0.018
Zinc (filtered)	0.005	mg/L	0.11	0.84	0.005	0.020
Alkali Metals						
Calcium	0.5	mg/L	37	23	5.2	13
Magnesium	0.5	mg/L	24	24	8.3	12
Potassium	0.5	mg/L	5.8	4.9	3.4	3.8
Sodium	0.5	mg/L	310	76	46	53

Client Sample ID			CS1	LBC	SDS	YS05
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-My09642**	**M17-My09643**	**M17-My09644**	**M17-My09645**
Date Sampled			**May 04, 2017**	**May 04, 2017**	**May 04, 2017**	**May 05, 2017**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.32	0.02	0.51	4.4
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	< 5	< 5	38
Chemical Oxygen Demand (COD)	25	mg/L	< 25	< 25	< 25	180
Chloride	1	mg/L	97	330	99	72
Dissolved Organic Carbon	5	mg/L	7.9	7.3	10	41
Ferric Iron - Fe3+	0.05	mg/L	0.48	0.44	28	570
Ferrous Iron - Fe2+	0.05	mg/L	0.25	0.24	0.44	150
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	1.3	0.08	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	1.3	0.07	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.4	0.7
Phosphate total (as P)	0.05	mg/L	0.05	0.10	0.14	0.57
Sulphate (as S)	5	mg/L	< 5	88	230	1300
Sulphate (as SO4)	5	mg/L	6.2	260	700	4000
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2	< 2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.4	0.9	5.1
Total Nitrogen (as N)	0.2	mg/L	2.1	0.5	0.9	5.1
Total Organic Carbon	5	mg/L	8.9	7.6	10	42
Total Sulphur (as S)	5	mg/L	< 5	88	230	1300

Client Sample ID			CS1	LBC	SDS	YS05
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-My09642**	**M17-My09643**	**M17-My09644**	**M17-My09645**
Date Sampled			**May 04, 2017**	**May 04, 2017**	**May 04, 2017**	**May 05, 2017**
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	30	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	30	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	15	75	[R05]33
Aluminium (filtered)	0.05	mg/L	< 0.05	14	74	34
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	[R05]0.32
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.37
Cadmium	0.0002	mg/L	< 0.0002	0.0003	0.0012	[R05]0.0005
Cadmium (filtered)	0.0002	mg/L	< 0.0002	0.0003	0.0013	0.0006
Chromium	0.001	mg/L	< 0.001	0.001	0.003	[R05]0.017
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	0.003	0.023
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	[R05]0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Iron	0.05	mg/L	0.73	0.68	28	720
Iron (filtered)	0.05	mg/L	0.50	0.64	27	720
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.010
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.010
Manganese	0.005	mg/L	0.038	0.26	0.15	[R05]0.14
Manganese (filtered)	0.005	mg/L	0.026	0.26	0.15	0.15
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.091	[R05]0.20	[R05]0.17
Nickel (filtered)	0.001	mg/L	< 0.001	0.091	0.22	0.20
Zinc	0.005	mg/L	0.016	[R05]0.33	[R05]1.3	[R05]0.35
Zinc (filtered)	0.005	mg/L	0.010	0.35	1.5	0.36
Alkali Metals						
Calcium	0.5	mg/L	5.3	38	20	13
Magnesium	0.5	mg/L	8.1	31	25	13
Potassium	0.5	mg/L	3.5	5.8	3.5	5.1
Sodium	0.5	mg/L	46	140	63	69

Client Sample ID			YS03	YS02	YS01	TB1A
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-My09646**	**M17-My09647**	**M17-My09648**	**M17-My09649**
Date Sampled			**May 05, 2017**	**May 05, 2017**	**May 05, 2017**	**May 05, 2017**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	5.1	2.6	0.20	< 0.01
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	58	< 5	< 5	< 5
Chemical Oxygen Demand (COD)	25	mg/L	230	72	35	< 25
Chloride	1	mg/L	100	110	570	150
Dissolved Organic Carbon	5	mg/L	19	6.1	9.9	< 5
Ferric Iron - Fe3+	0.05	mg/L	540	11	< 0.05	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	350	56	30	< 0.05
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.31	0.31

Client Sample ID			YS03	YS02	YS01	TB1A
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M17-My09646	M17-My09647	M17-My09648	M17-My09649
Date Sampled			May 05, 2017	May 05, 2017	May 05, 2017	May 05, 2017
Test/Reference	LOR	Unit				
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.30	0.31
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.2	< 0.2
Phosphate total (as P)	0.05	mg/L	0.38	0.17	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	290	280	160	19
Sulphate (as SO4)	5	mg/L	860	840	470	56
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2	< 2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.5	3.0	0.4	< 0.2
Total Nitrogen (as N)	0.2	mg/L	5.5	3.0	0.7	0.3
Total Organic Carbon	5	mg/L	26	5.2	9.7	< 5
Total Sulphur (as S)	5	mg/L	290	280	160	19
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	130	0.63	54	< 0.05
Aluminium (filtered)	0.05	mg/L	130	< 0.05	40	< 0.05
Arsenic	0.001	mg/L	0.022	0.001	0.003	< 0.001
Arsenic (filtered)	0.001	mg/L	0.014	< 0.001	0.002	< 0.001
Cadmium	0.0002	mg/L	0.0003	< 0.0002	0.0016	< 0.0002
Cadmium (filtered)	0.0002	mg/L	0.0003	< 0.0002	0.0010	< 0.0002
Chromium	0.001	mg/L	0.023	0.001	0.004	< 0.001
Chromium (filtered)	0.001	mg/L	0.020	< 0.001	0.004	< 0.001
Copper	0.001	mg/L	0.006	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	[R05]890	[R05]67	30	< 0.05
Iron (filtered)	0.05	mg/L	900	75	15	< 0.05
Lead	0.001	mg/L	0.012	< 0.001	0.004	< 0.001
Lead (filtered)	0.001	mg/L	0.009	< 0.001	0.004	< 0.001
Manganese	0.005	mg/L	0.96	0.77	0.63	0.13
Manganese (filtered)	0.005	mg/L	0.94	0.77	0.43	0.13
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.47	0.005	0.49	0.009
Nickel (filtered)	0.001	mg/L	0.43	0.003	0.37	0.009
Zinc	0.005	mg/L	0.69	0.024	0.86	0.10
Zinc (filtered)	0.005	mg/L	0.61	0.016	0.81	0.10
Alkali Metals						
Calcium	0.5	mg/L	150	170	27	21
Magnesium	0.5	mg/L	73	48	37	11
Potassium	0.5	mg/L	10	8.4	5.0	4.1
Sodium	0.5	mg/L	89	71	110	63

Client Sample ID			LBC01	PASS1	LBC02
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-My09650**	**M17-My09651**	**M17-My09652**
Date Sampled			**May 05, 2017**	**May 05, 2017**	**May 05, 2017**
Test/Reference	LOR	Unit			
Ammonia (as N)	0.01	mg/L	12	0.80	0.09
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	6.1	6.5	< 5
Chemical Oxygen Demand (COD)	25	mg/L	30	< 25	30
Chloride	1	mg/L	590	1400	330
Dissolved Organic Carbon	5	mg/L	5.2	< 5	8.1
Ferric Iron - Fe3+	0.05	mg/L	12	4	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	80	6.9	[Q18]18
Fluoride	0.5	mg/L	< 0.5	< 0.5	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.30	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.27	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.2
Phosphate total (as P)	0.05	mg/L	< 0.05	0.21	0.12
Sulphate (as S)	5	mg/L	14	53	6.1
Sulphate (as SO4)	5	mg/L	43	160	18
Sulphide (as S)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1
Thiosulphate (as S)	1	mg/L	< 2	< 2	< 2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	12	0.8	0.3
Total Nitrogen (as N)	0.2	mg/L	12	1.1	0.3
Total Organic Carbon	5	mg/L	6.0	< 5	7.5
Total Sulphur (as S)	5	mg/L	14	53	6.1
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	140	230	140
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	140	230	140
Heavy Metals					
Aluminium	0.05	mg/L	< 0.05	0.17	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.006	0.011
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	92	11	[Q18]17
Iron (filtered)	0.05	mg/L	24	< 0.05	2.9
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	[R05]0.082	[R05]0.032	0.28
Manganese (filtered)	0.005	mg/L	0.088	0.044	0.26
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.002
Zinc	0.005	mg/L	[R05]0.008	< 0.005	0.006
Zinc (filtered)	0.005	mg/L	0.011	< 0.005	0.006

Client Sample ID			LBC01	PASS1	LBC02
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M17-My09650**	**M17-My09651**	**M17-My09652**
Date Sampled			**May 05, 2017**	**May 05, 2017**	**May 05, 2017**
Test/Reference	LOR	Unit			
Alkali Metals					
Calcium	0.5	mg/L	99	240	59
Magnesium	0.5	mg/L	68	91	28
Potassium	0.5	mg/L	5.3	11	5.4
Sodium	0.5	mg/L	160	510	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
Nitrogens (speciated)			
Ammonia (as N)	Melbourne	May 12, 2017	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	May 12, 2017	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Nitrate (as N)	Melbourne	May 12, 2017	7 Day
- Method: APHA 4500-NO3 Nitrate Nitrogen by FIA			
Nitrite (as N)	Melbourne	May 12, 2017	2 Day
- Method: APHA 4500-NO2 Nitrite Nitrogen by FIA			
Organic Nitrogen (as N)	Melbourne	May 10, 2017	7 Day
- Method: APHA 4500 Organic Nitrogen (N)			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 12, 2017	7 Day
- Method: APHA 4500 TKN			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	May 12, 2017	2 Day
- Method: LTM-INO-4010			
Chemical Oxygen Demand (COD)	Melbourne	May 12, 2017	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
Dissolved Organic Carbon	Melbourne	May 12, 2017	28 Day
- Method: APHA 5310B Dissolved Organic Carbon			
Phosphate total (as P)	Melbourne	May 12, 2017	28 Day
- Method: APHA 4500-P E. Phosphorous			
Total Organic Carbon	Melbourne	May 12, 2017	28 Day
- Method: APHA 5310B Total Organic Carbon			
Heavy Metals	Melbourne	May 12, 2017	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Heavy Metals (filtered)	Melbourne	May 12, 2017	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Mercury (filtered)	Melbourne	May 12, 2017	28 Day
- Method: USEPA 7470/1 Mercury			
Alkali Metals	Melbourne	May 12, 2017	180 Day
- Method: USEPA 6010 Alkali Metals			
Eurofins | mgt Suite B11F: Cl, SO4, Alkalinity (CO3, HCO3, OH-, Total Alkalinity), Total F			
Chloride	Melbourne	May 12, 2017	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Fluoride	Melbourne	May 15, 2017	28 Day
- Method: LM-LTM-INO-4300 (Fluoride by Ion Chromatography)			
Sulphate (as SO4)	Melbourne	May 12, 2017	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Melbourne	May 12, 2017	14 Day
- Method: APHA 2320 Alkalinity by Titration			
Iron (speciated)			
Ferrous Iron - Fe2+	Melbourne	May 12, 2017	7 Days
- Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser			
Total Sulphur Set (as S)			
Sulphate (as S)	Melbourne	May 12, 2017	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Sulphide (as S)	Melbourne	May 12, 2017	7 Day
- Method: APHA 4500-S C & D - Sulphide			
Sulphite (as S)	Melbourne	May 12, 2017	2 Day
- Method: LTM-INO-4240 Sulfite & Thiosulfate in Water			

Description	Testing Site	Extracted	Holding Time
Thiosulphate (as S)	Melbourne	May 12, 2017	2 Day
- Method: LTM-INO-4240 Sulfite & Thiosulfate in Water			
Total Sulphur (as S)	Melbourne	May 12, 2017	7 Day
- Method: Sum of Constituent Analytes			

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Company Name: Jacobs Group (Australia) P/L VIC
Address: PO Box 312 Flinders Lane
Melbourne
VIC 8009

Project Name: BARWON DOWNS HYDROGEN LOGICAL ASSESSMENT

Order No.: b191000
Report #: 545553
Phone: 03 8668 3000
Fax: 03 8668 3001

Received: May 10, 2017 9:31 AM
Due: May 17, 2017
Priority: 5 Day
Contact Name: Andrew Nelson

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail	Aluminium	Aluminium	Aluminium (filtered)	Aluminium (filtered)	Arsenic	Arsenic	Arsenic (filtered)	Arsenic (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Cadmium	Cadmium	Cadmium (filtered)	Cadmium (filtered)	Calcium	Chemical Oxygen Demand (COD)	Chromium	Chromium	Chromium (filtered)	Chromium (filtered)	Copper	Copper	Copper (filtered)	Copper (filtered)	Dissolved Organic Carbon	Iron (filtered)	Iron (filtered)	Lead	Lead	Lead (filtered)	Lead (filtered)	Magnesium	Manganese	Manganese (filtered)	Manganese (filtered)	Mercury	Mercury	Mercury (filtered)	Mercury (filtered)	Nickel	Nickel	Nickel (filtered)	Nickel (filtered)	Phosphate total (as P)	Potassium	Sodium	Total Organic Carbon	Zinc	Zinc	Zinc (filtered)	Zinc (filtered)	Iron (speciated)	Total Sulphur Set (as S)	Nitrogens (speciated)	Eurofins | mgt Suite B11F: Cl, SO4, Alkalinity
Melbourne Laboratory - NATA Site # 1254 & 14271	X		X		X		X		X	X		X		X	X	X		X		X		X		X	X		X		X		X	X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
Sydney Laboratory - NATA Site # 18217		X		X		X		X			X		X				X		X		X		X			X		X		X		X		X		X		X		X						X		X	X		
Brisbane Laboratory - NATA Site # 20794																																																					
Perth Laboratory - NATA Site # 18217																																																					
External Laboratory																																																					
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																																																	
1	A3	May 04, 2017		Water	M17-My09638	X		X		X		X		X	X		X		X	X	X		X		X		X		X		X		X	X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
2	YGS	May 04, 2017		Water	M17-My09639	X		X		X		X		X	X		X		X	X	X		X		X		X		X		X		X	X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
3	SUS	May 04, 2017		Water	M17-My09640	X		X		X		X		X	X		X		X	X	X		X		X		X		X		X		X	X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
4	YS06	May 04, 2017		Water	M17-My09641		X		X		X		X	X		X		X	X	X		X		X		X		X		X		X		X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
5	CS1	May 04, 2017		Water	M17-My09642	X		X		X		X		X	X		X		X	X	X		X		X		X		X		X		X	X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
6	LBC	May 04, 2017		Water	M17-My09643	X		X		X		X		X	X		X		X	X	X		X		X		X		X		X		X	X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
7	SDS	May 04, 2017		Water	M17-My09644	X		X			X		X	X		X		X	X	X			X		X		X		X		X		X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
8	YS05	May 05, 2017		Water	M17-My09645		X		X		X		X	X		X		X	X	X			X		X		X		X		X		X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
9	YS03	May 05, 2017		Water	M17-My09646		X		X		X		X	X		X		X	X	X			X		X		X		X		X		X		X		X		X		X		X	X	X	X	X		X		X	X	X	X
10	YS02	May 05, 2017		Water	M17-My09647	X		X		X		X		X	X		X		X	X	X			X		X		X		X		X		X		X		X		X		X		X	X	X	X	X		X		X	X	X	X

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Project Name: BARWON DOWNS HYDROGEN LOGICAL ASSESSMENT

Order No.: b191000
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Phone: 03 8668 3000
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Received: May 10, 2017 9:31 AM
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Contact Name: Andrew Nelson

Eurofins | mgt Analytical Services Manager : Onur Mehmet

Sample Detail						Aluminium	Aluminium	Aluminium (filtered)	Aluminium (filtered)	Arsenic	Arsenic	Arsenic (filtered)	Arsenic (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Cadmium	Cadmium	Cadmium (filtered)	Cadmium (filtered)	Calcium	Chemical Oxygen Demand (COD)	Chromium	Chromium	Chromium (filtered)	Chromium (filtered)	Copper	Copper	Copper (filtered)	Copper (filtered)	Dissolved Organic Carbon	Iron (filtered)	Iron (filtered)	Lead	Lead	Lead (filtered)	Lead (filtered)	Magnesium	Manganese	Manganese	Manganese (filtered)	Manganese (filtered)	Mercury	Mercury	Mercury (filtered)	Mercury (filtered)	Nickel	Nickel	Nickel (filtered)	Nickel (filtered)	Phosphate total (as P)	Potassium	Sodium	Total Organic Carbon	Zinc	Zinc	Zinc (filtered)	Zinc (filtered)	Iron (speciated)	Total Sulphur Set (as S)	Nitrogens (speciated)	Eurofins	mgt Suite B11F: Cl, SO4, Alkalinity
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X		X	X		X		X	X	X		X		X		X		X	X		X		X		X	X		X		X		X		X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X		X		X		X			X		X				X		X		X		X			X		X		X		X		X		X		X		X						X		X	X		
Brisbane Laboratory - NATA Site # 20794																																																											
Perth Laboratory - NATA Site # 18217																																																											
11	YS01	May 05, 2017		Water	M17-My09648	X		X		X		X		X	X		X		X	X	X		X		X		X		X	X		X		X		X	X		X		X		X		X		X		X		X		X	X	X	X	X
12	TB1A	May 05, 2017		Water	M17-My09649	X		X		X		X		X	X		X		X	X	X	X	X		X		X		X	X		X		X		X	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X
13	LBC01	May 05, 2017		Water	M17-My09650		X		X		X		X	X		X		X	X	X		X		X		X		X	X		X		X		X	X		X		X		X		X		X		X		X		X	X	X	X	X
14	PASS1	May 05, 2017		Water	M17-My09651	X		X		X		X		X	X		X		X	X	X		X		X		X		X	X		X		X		X	X		X		X		X		X		X		X		X	X	X	X	X
15	LBC02	May 05, 2017		Water	M17-My09652	X		X		X		X		X	X		X		X	X	X		X		X		X		X	X		X		X		X	X		X		X		X		X		X		X		X	X	X	X	X
Test Counts						15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

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. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. 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

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 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, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene 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 Aroclor 1260 in Matrix Spikes and LCS.
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 RPDs 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
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5			5	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 25			25	Pass	
Chloride	mg/L	< 1			1	Pass	
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Fluoride	mg/L	< 0.5			0.5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Sulphite (as S)	mg/L	< 0.5			0.5	Pass	
Thiosulphate (as S)	mg/L	< 1			1	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Organic Carbon	mg/L	< 5			5	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Ammonia (as N)	%	89			70-130	Pass	
Chemical Oxygen Demand (COD)	%	96			70-130	Pass	
Chloride	%	97			70-130	Pass	
Ferrous Iron - Fe2+	%	101			70-130	Pass	
Fluoride	%	93			70-130	Pass	
Nitrate & Nitrite (as N)	%	90			70-130	Pass	
Nitrate (as N)	%	90			70-130	Pass	
Nitrite (as N)	%	105			70-130	Pass	
Phosphate total (as P)	%	94			70-130	Pass	
Sulphate (as S)	%	100			70-130	Pass	
Sulphate (as SO4)	%	100			70-130	Pass	
Sulphide (as S)	%	100			70-130	Pass	
Thiosulphate (as S)	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	111			70-130	Pass	
Total Organic Carbon	%	107			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	89			70-130	Pass	
Total Alkalinity (as CaCO3)	%	89			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	94			80-120	Pass	
Aluminium (filtered)	%	94			80-120	Pass	
Arsenic	%	104			80-120	Pass	
Arsenic (filtered)	%	104			80-120	Pass	
Cadmium	%	109			80-120	Pass	
Cadmium (filtered)	%	109			80-120	Pass	
Chromium	%	100			80-120	Pass	
Chromium (filtered)	%	100			80-120	Pass	
Copper	%	104			80-120	Pass	
Copper (filtered)	%	104			80-120	Pass	
Iron	%	120			80-120	Pass	
Iron (filtered)	%	120			80-120	Pass	
Lead	%	102			80-120	Pass	
Lead (filtered)	%	102			80-120	Pass	
Manganese	%	101			80-120	Pass	
Manganese (filtered)	%	101			80-120	Pass	
Mercury	%	96			75-125	Pass	
Mercury (filtered)	%	96			70-130	Pass	
Nickel	%	103			80-120	Pass	
Nickel (filtered)	%	103			80-120	Pass	
Zinc	%	108			80-120	Pass	
Zinc (filtered)	%	108			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	95			70-130	Pass	
Magnesium	%	103			70-130	Pass	
Potassium	%	92			70-130	Pass	
Sodium	%	91			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ferrous Iron - Fe2+	M17-My12093	NCP	%	88			70-130	Pass	
Nitrate & Nitrite (as N)	M17-My10516	NCP	%	83			70-130	Pass	
Nitrate (as N)	M17-My10516	NCP	%	83			70-130	Pass	
Nitrite (as N)	M17-My10516	NCP	%	92			70-130	Pass	
Phosphate total (as P)	P17-My11673	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron (filtered)	M17-My07820	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-My09638	CP	%	92			70-130	Pass	
Magnesium	M17-My09638	CP	%	94			70-130	Pass	
Potassium	M17-My09638	CP	%	85			70-130	Pass	
Sodium	M17-My09638	CP	%	104			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M17-My09640	CP	%	88			75-125	Pass	
Arsenic	M17-My09640	CP	%	109			75-125	Pass	
Cadmium	M17-My09640	CP	%	108			75-125	Pass	
Chromium	M17-My09640	CP	%	98			75-125	Pass	
Copper	M17-My09640	CP	%	104			75-125	Pass	
Iron	M17-My09640	CP	%	49			75-125	Fail	Q08
Lead	M17-My09640	CP	%	103			75-125	Pass	
Manganese	M17-My09640	CP	%	103			75-125	Pass	
Mercury	M17-My09640	CP	%	97			70-130	Pass	
Nickel	M17-My09640	CP	%	104			75-125	Pass	
Zinc	M17-My09640	CP	%	107			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-My09643	CP	%	109			70-130	Pass	
Sulphate (as S)	M17-My09643	CP	%	103			70-130	Pass	
Sulphate (as SO4)	M17-My09643	CP	%	103			70-130	Pass	
Spike - % Recovery									
				Result 1					
Fluoride	M17-My09644	CP	%	69			70-130	Fail	Q08
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-My09645	CP	%	81			70-130	Pass	
Spike - % Recovery									
				Result 1					
Total Kjeldahl Nitrogen (as N)	M17-My09646	CP	%	99			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	M17-My09647	CP	%	91			75-125	Pass	
Arsenic (filtered)	M17-My09647	CP	%	108			70-130	Pass	
Cadmium (filtered)	M17-My09647	CP	%	101			70-130	Pass	
Chromium (filtered)	M17-My09647	CP	%	101			70-130	Pass	
Copper (filtered)	M17-My09647	CP	%	103			70-130	Pass	
Lead (filtered)	M17-My09647	CP	%	104			70-130	Pass	
Manganese (filtered)	M17-My09647	CP	%	21			70-130	Fail	Q08
Mercury (filtered)	M17-My09647	CP	%	99			70-130	Pass	
Nickel (filtered)	M17-My09647	CP	%	103			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc (filtered)	M17-My09647	CP	%	104			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-My09648	CP	%	101			70-130	Pass	
Magnesium	M17-My09648	CP	%	106			70-130	Pass	
Potassium	M17-My09648	CP	%	95			70-130	Pass	
Sodium	M17-My09648	CP	%	107			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chemical Oxygen Demand (COD)	M17-My09649	CP	%	123			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M17-My09650	CP	%	78			70-130	Pass	
Arsenic	M17-My09650	CP	%	82			70-130	Pass	
Cadmium	M17-My09650	CP	%	76			70-130	Pass	
Chromium	M17-My09650	CP	%	75			70-130	Pass	
Copper	M17-My09650	CP	%	71			70-130	Pass	
Lead	M17-My09650	CP	%	80			70-130	Pass	
Zinc	M17-My09650	CP	%	71			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Biochemical Oxygen Demand (BOD-5 Day)	M17-My09638	CP	mg/L	< 5	< 5	<1	30%	Pass	
Dissolved Organic Carbon	M17-My13467	NCP	mg/L	8.5	7.5	12	30%	Pass	
Phosphate total (as P)	P17-My11672	NCP	mg/L	0.07	0.05	33	30%	Fail	Q15
Sulphite (as S)	M17-My22083	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Thiosulphate (as S)	M17-My22083	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P17-My11672	NCP	mg/L	1.2	1.2	2.0	30%	Pass	
Total Organic Carbon	M17-My13321	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Iron (filtered)	M17-My07820	NCP	mg/L	0.33	0.33	1.0	30%	Pass	
Zinc (filtered)	M17-My07820	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-My09638	CP	mg/L	37	38	2.0	30%	Pass	
Magnesium	M17-My09638	CP	mg/L	24	25	3.0	30%	Pass	
Potassium	M17-My09638	CP	mg/L	5.8	6.3	7.0	30%	Pass	
Sodium	M17-My09638	CP	mg/L	310	320	2.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-My09640	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M17-My09640	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-My09640	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M17-My09640	CP	mg/L	0.001	0.001	8.0	30%	Pass	
Copper	M17-My09640	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-My09640	CP	mg/L	0.47	0.45	3.0	30%	Pass	
Lead	M17-My09640	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-My09640	CP	mg/L	0.016	0.016	1.0	30%	Pass	
Mercury	M17-My09640	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-My09640	CP	mg/L	0.001	< 0.001	13	30%	Pass	
Zinc	M17-My09640	CP	mg/L	0.005	0.005	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Biochemical Oxygen Demand (BOD-5 Day)	M17-My09641	CP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M17-My09643	CP	mg/L	330	330	1.7	30%	Pass	
Fluoride	M17-My09643	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sulphate (as S)	M17-My09643	CP	mg/L	88	92	4.1	30%	Pass	
Sulphate (as SO4)	M17-My09643	CP	mg/L	260	280	4.1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Sulphide (as S)	M17-My09644	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-My09645	CP	mg/L	4.4	4.5	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-My09645	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-My09645	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-My09645	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M17-My09645	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M17-My09645	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M17-My09645	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M17-My09645	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M17-My09647	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	M17-My09647	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M17-My09647	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M17-My09647	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M17-My09647	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M17-My09647	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M17-My09647	CP	mg/L	0.77	0.75	2.0	30%	Pass	
Mercury (filtered)	M17-My09647	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M17-My09647	CP	mg/L	0.003	0.003	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chemical Oxygen Demand (COD)	M17-My09648	CP	mg/L	35	< 25	79	30%	Fail	Q15
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-My09648	CP	mg/L	27	29	7.0	30%	Pass	
Magnesium	M17-My09648	CP	mg/L	37	40	7.0	30%	Pass	
Potassium	M17-My09648	CP	mg/L	5.0	4.9	1.0	30%	Pass	
Sodium	M17-My09648	CP	mg/L	110	110	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ferrous Iron - Fe2+	M17-My09650	CP	mg/L	80	75	6.8	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium	M17-My09650	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Copper	M17-My09650	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-My09650	CP	mg/L	0.082	0.086	4.0	30%	Pass	
Nickel	M17-My09650	CP	mg/L	0.001	0.001	2.0	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

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q18	Ferrous Iron results are present at higher levels than total/soluble Iron results. This is due to experimental uncertainties associated with the different analytical techniques used in analysing Iron (total/soluble) and Ferrous Iron.
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

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National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.