



APPENDIX A: HYDROGRAPHS

Chart 1a - Rainfall and groundwater levels at Stage 2 -4

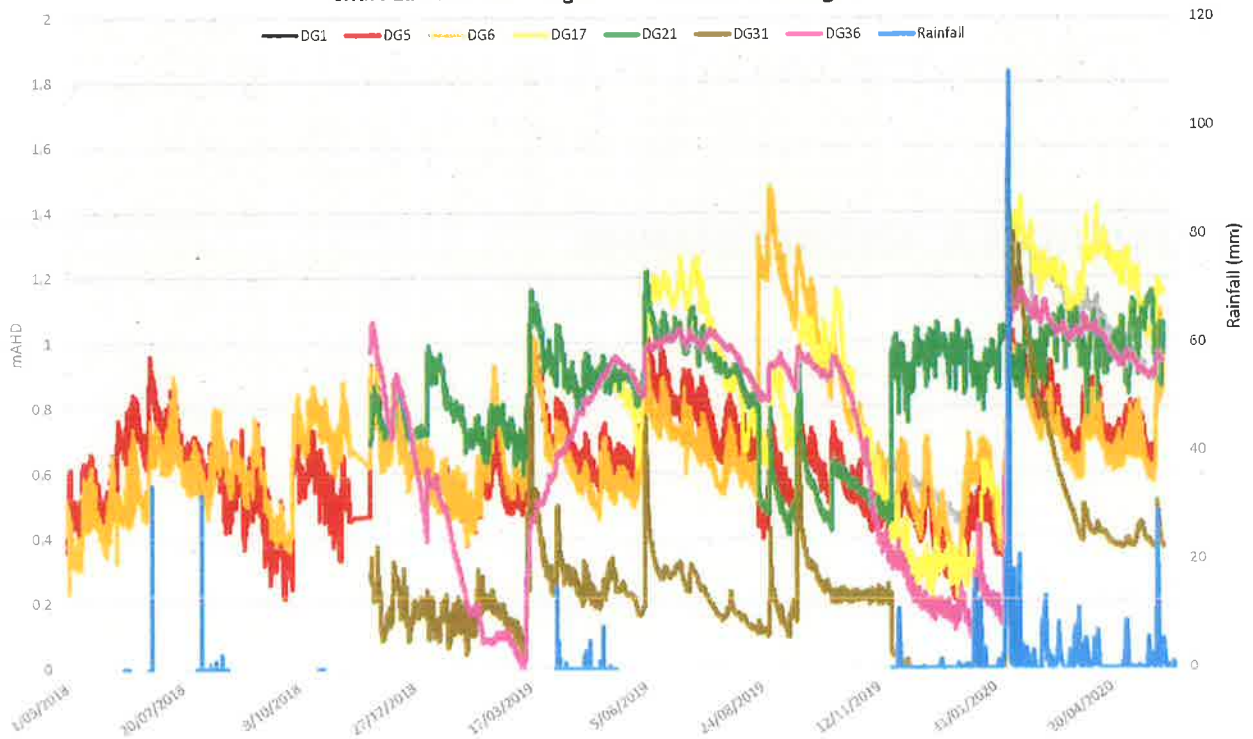


Chart 1b - Rainfall and groundwater levels at Dunmore Quarry



Chart 1c - Rainfall and groundwater levels at Stage 5



Chart 2a - Tidal data compared to groundwater levels at Stage 2 -4

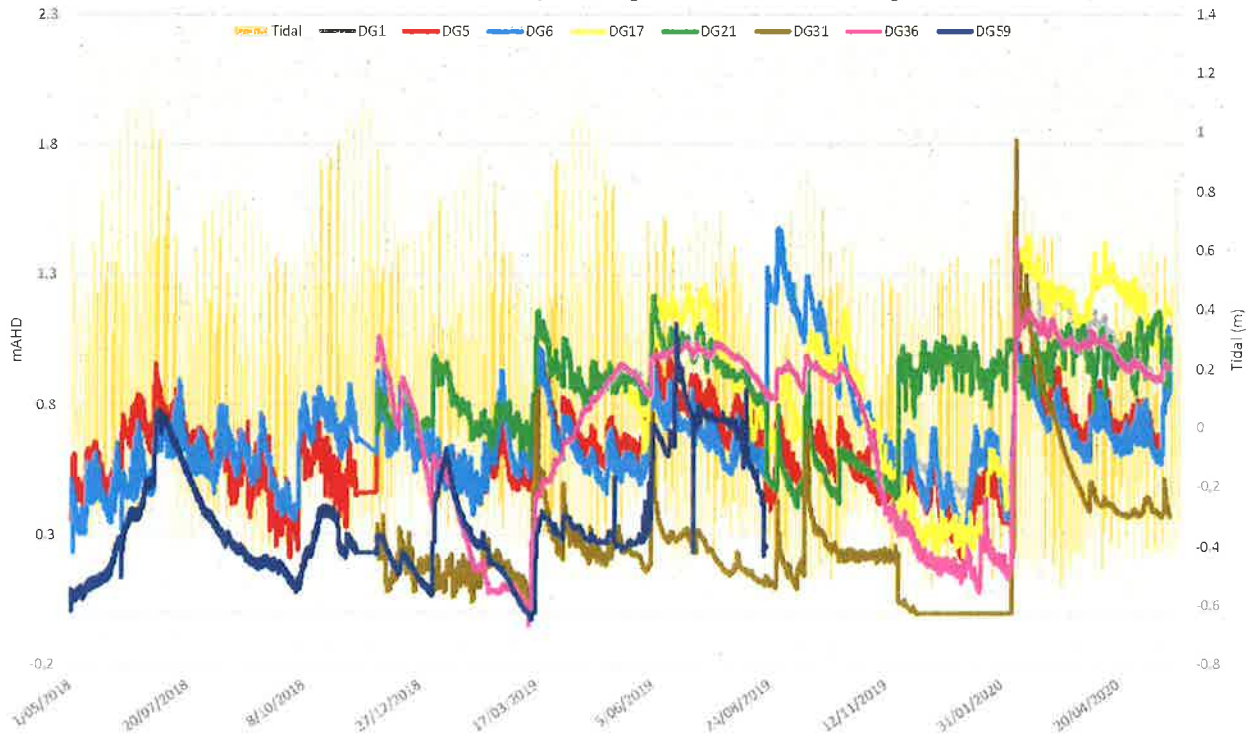


Chart 2b - Tidal data compared to groundwater levels at Dunmore Quarry

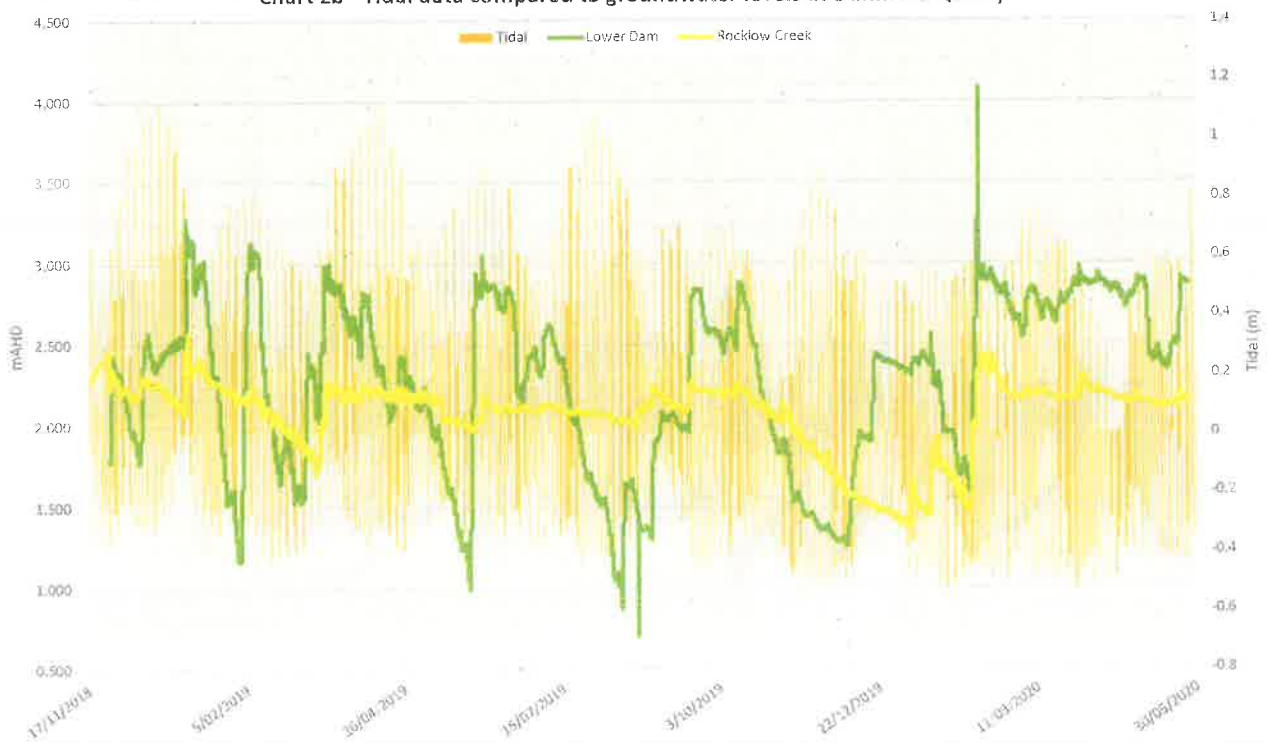
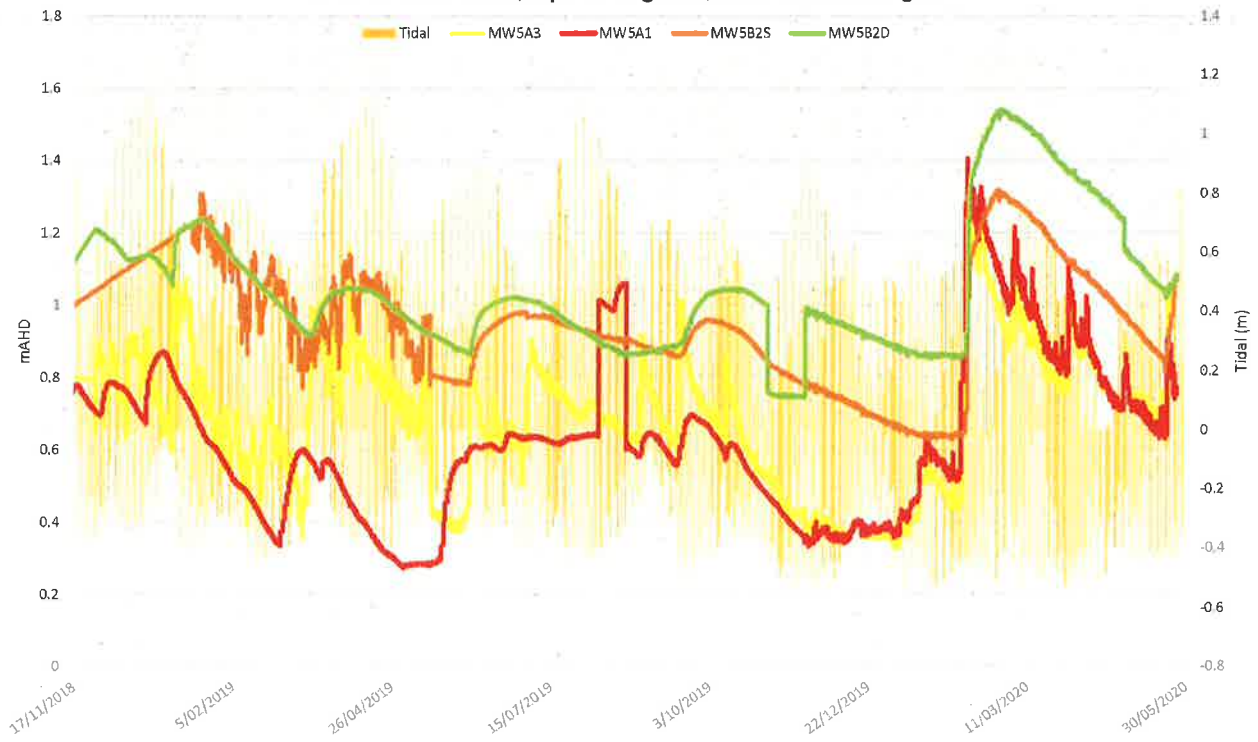


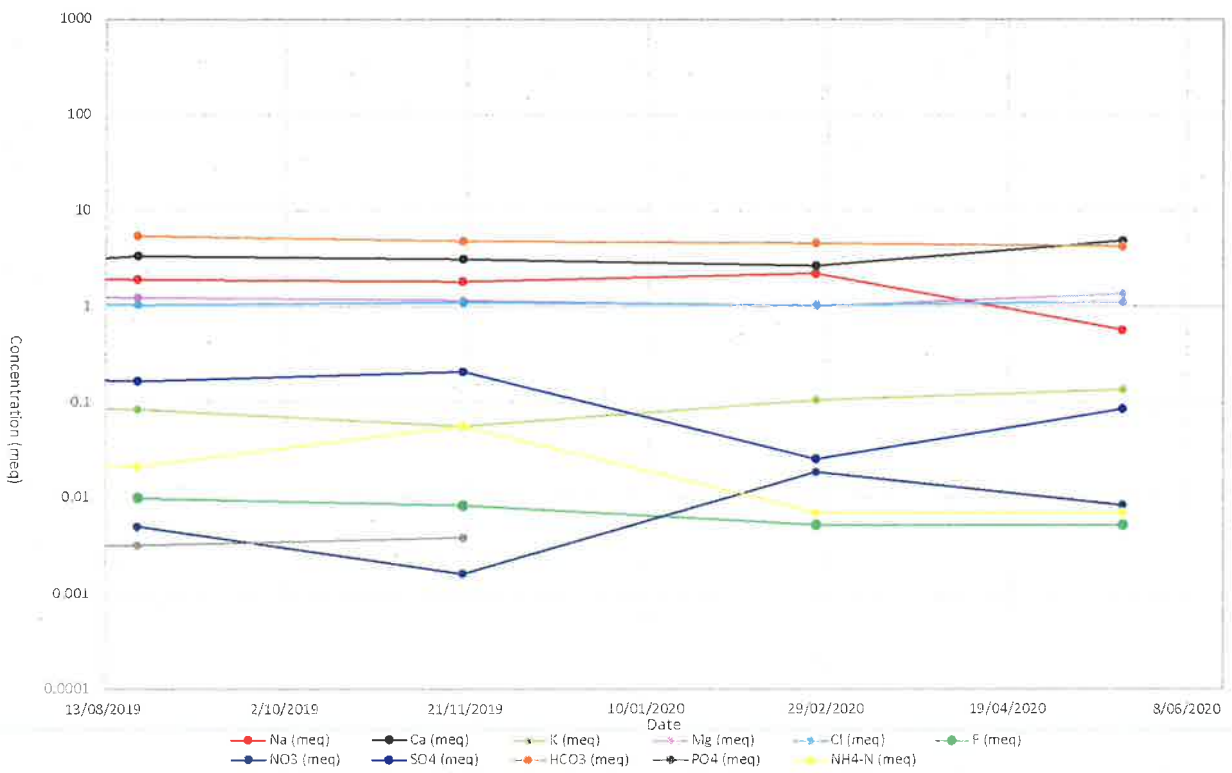
Chart 2c -Tidal data compared to groundwater levels at Stage 5



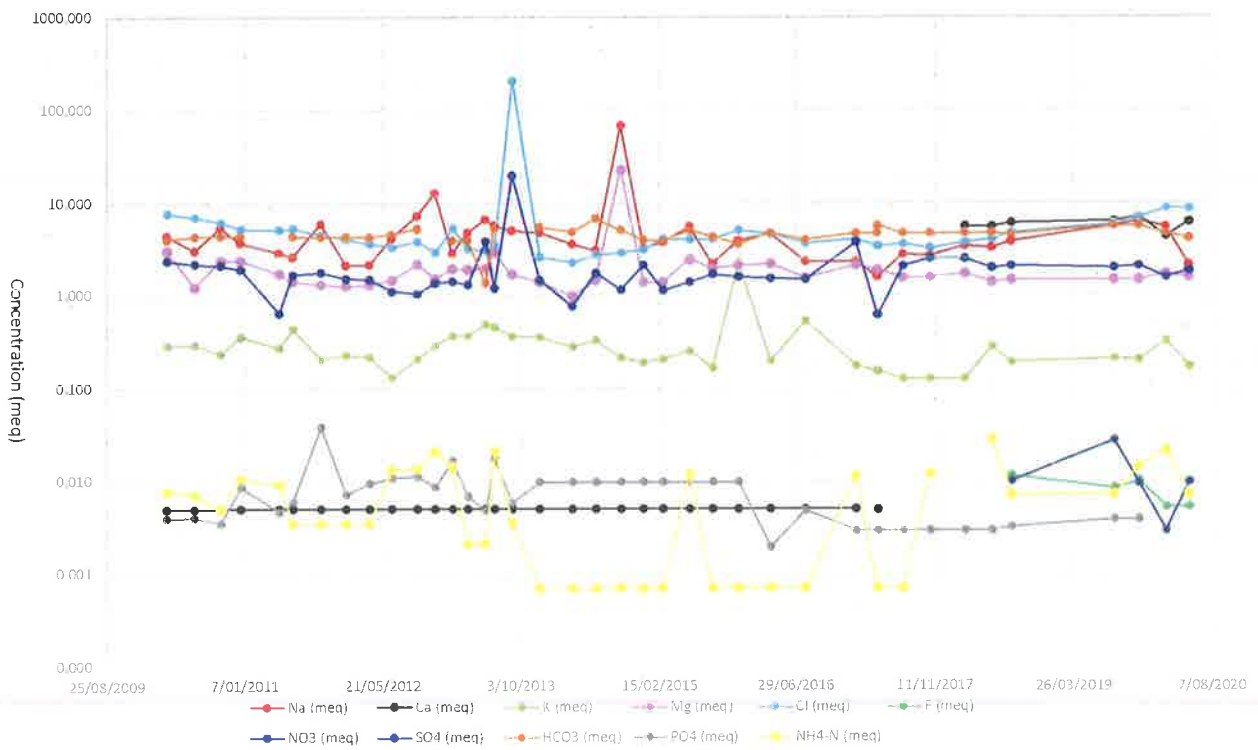


APPENDIX B: SCHOELLER PLOTS

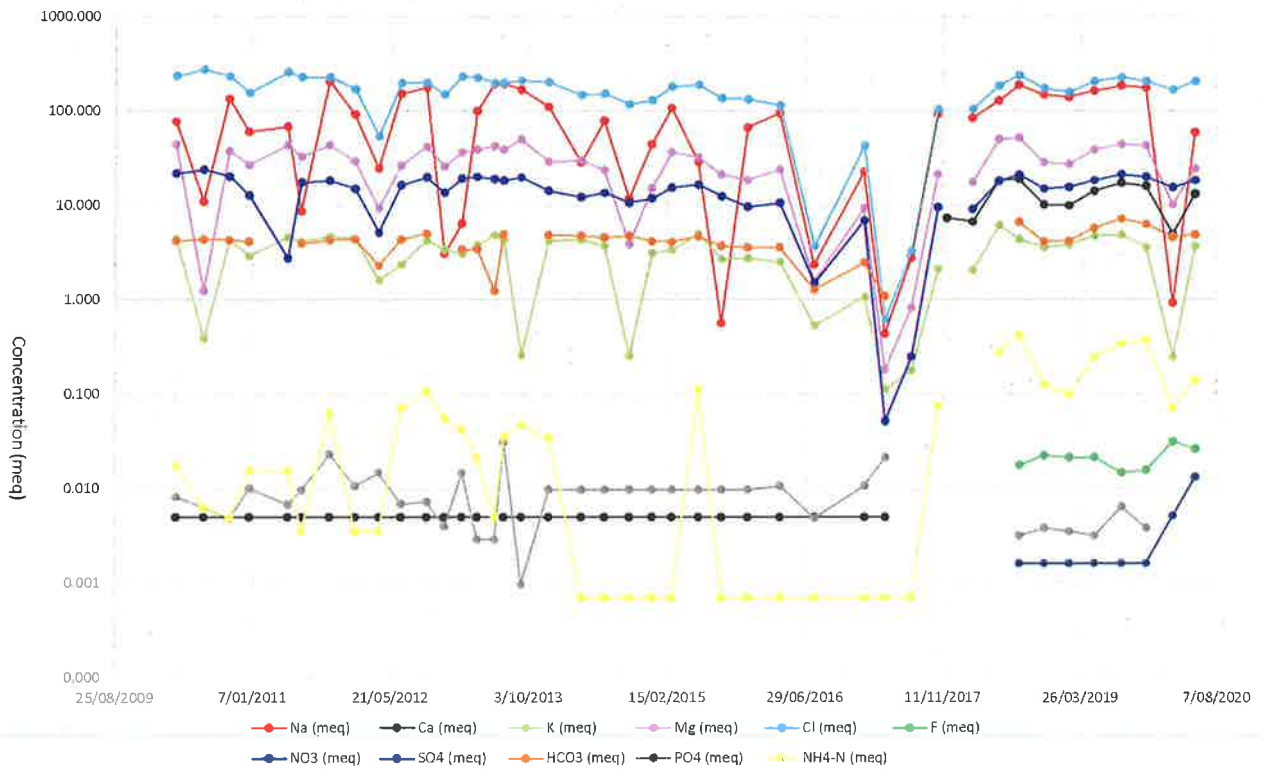
DG-1S



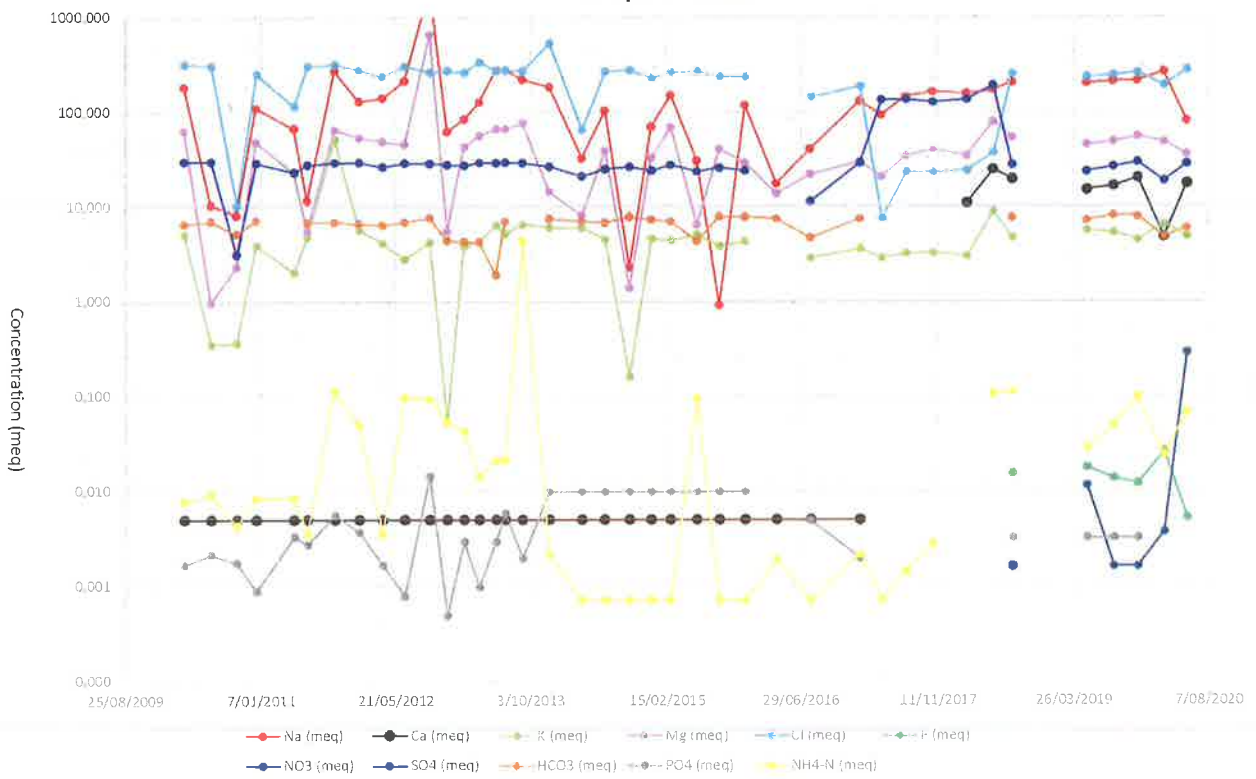
Graph 3 - DG-5S



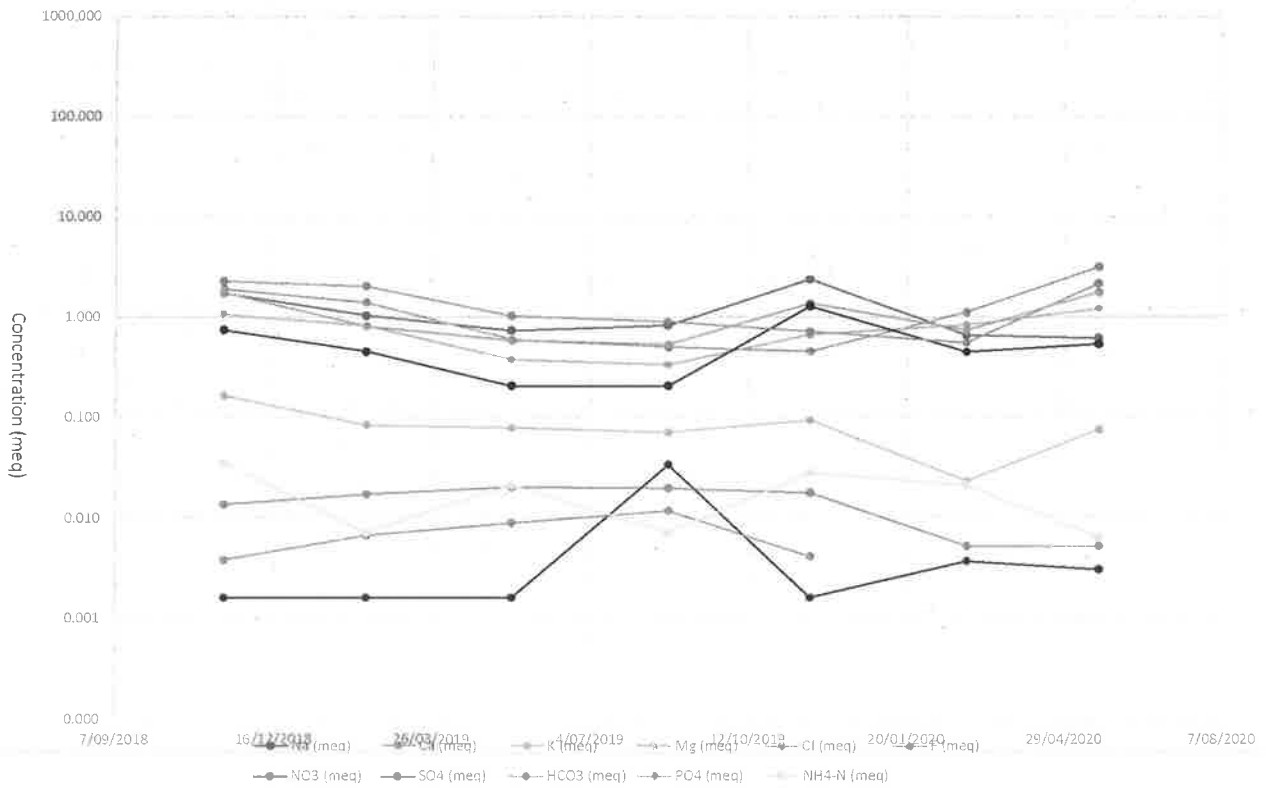
Graph 4- DG-5D



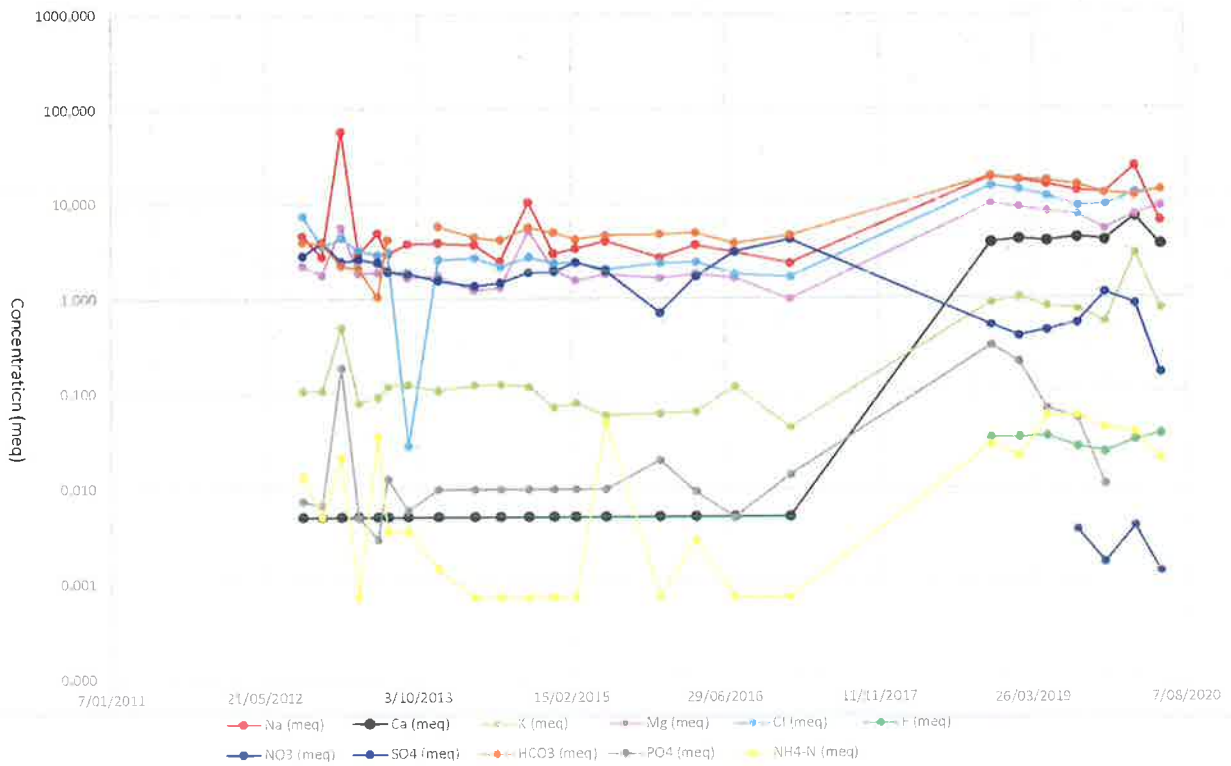
Graph 5 - GWM4



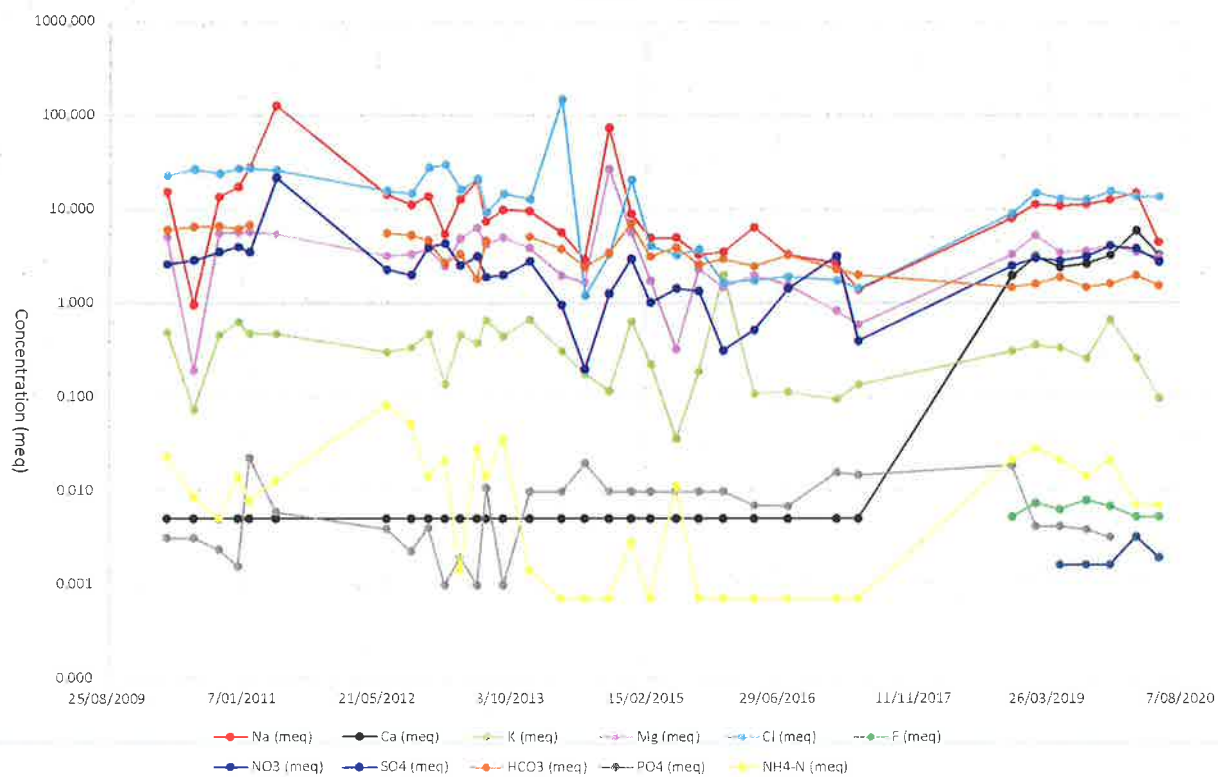
Graph 6 - DG-7



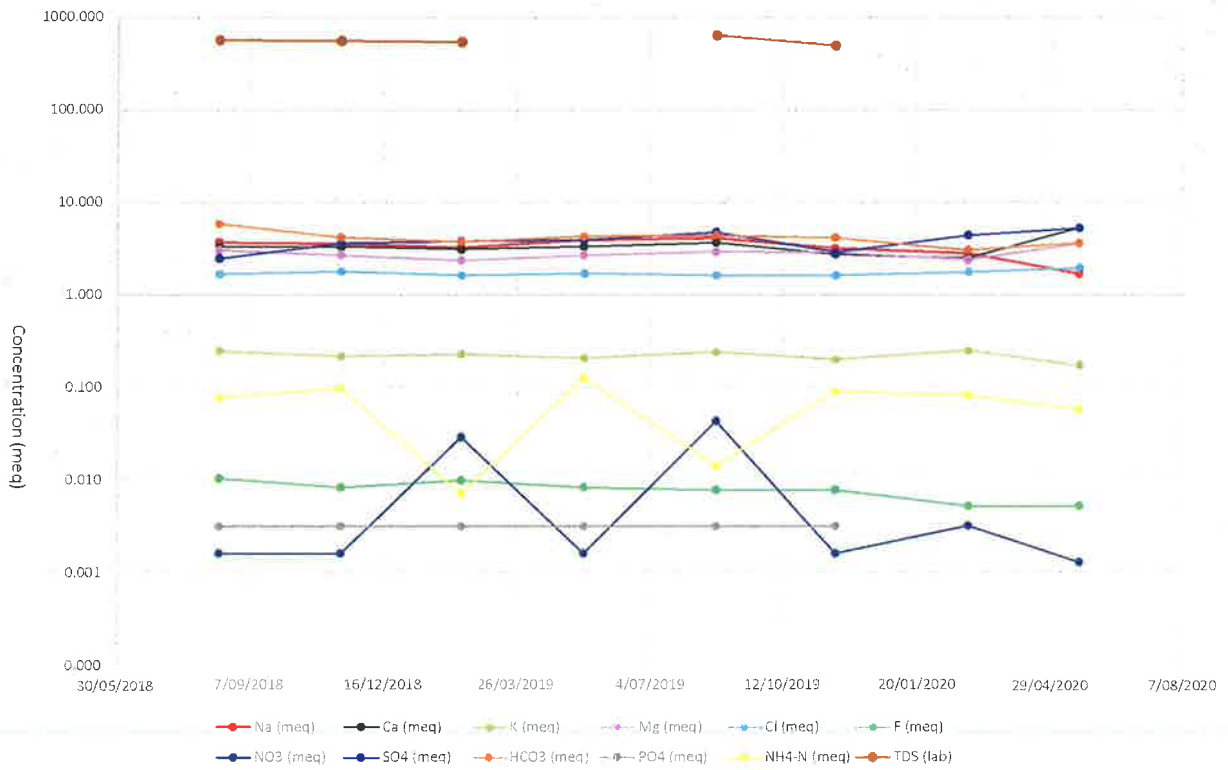
Graph 7 - DG-17



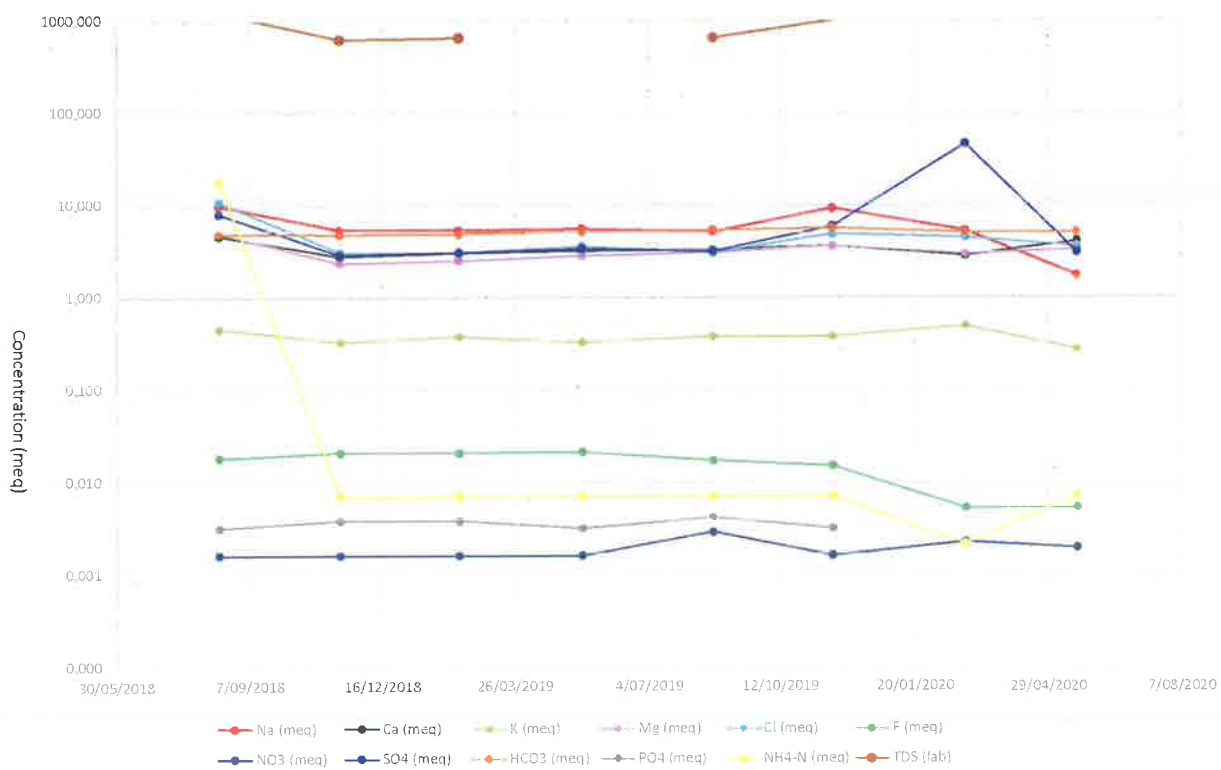
Graph 8 - DG-21



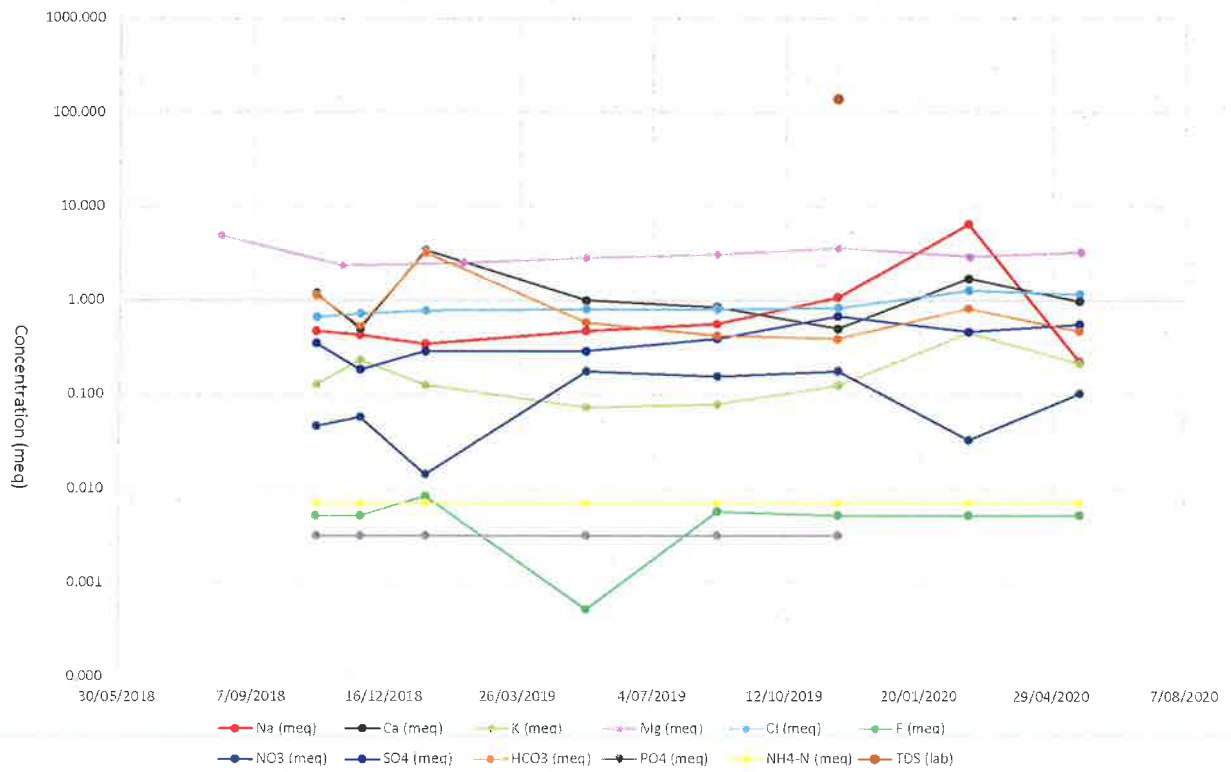
Graph 10 - DG-35



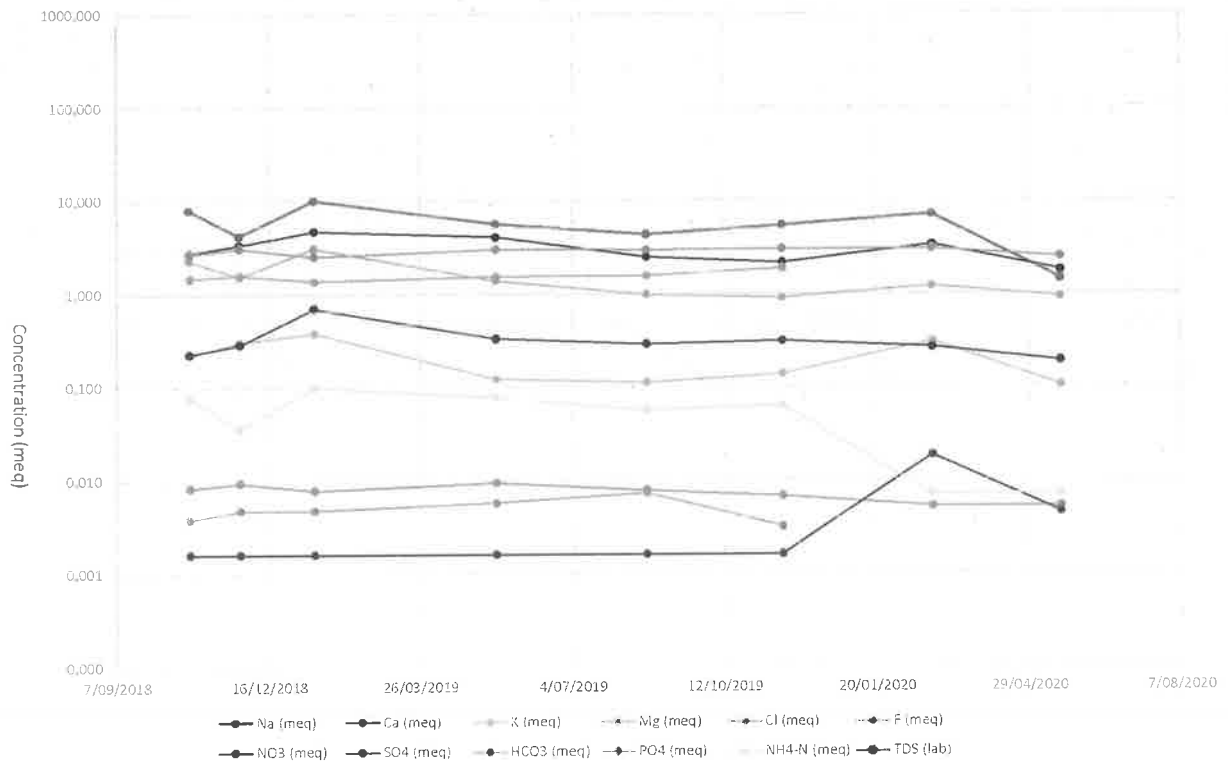
Graph 10 - DG-36



Graph 10 - MW5A1



Graph 10 - MW5A3





APPENDIX C: LABORATORY TRANSCRIPTS

**SYDNEY
ANALYTICAL
LABORATORIES**

Page 1 of 13

Office:
PO BOX 48
ERMINGTON NSW 2115

Laboratory:
1/4 ABBOTT ROAD
SEVEN HILLS NSW 2147
Telephone: (02) 9838 8903
Fax: (02) 9838 8919
A.C.N. 003 614 695
A.B.N. 81 829 182 852
NATA No: 1884

ANALYTICAL REPORT for:

ENVIRONMENTAL & EARTH SCIENCES

PO BOX 380
NORTH SYDNEY 2059

ATTN: E.GRIFFITHS

JOB NO: SAL27331
CLIENT ORDER: 119037
DATE RECEIVED: 23/08/19
DATE COMPLETED: 06/09/19
TYPE OF SAMPLES: WATERS
NO OF SAMPLES: 18



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LS
Issued on 06/09/19
Lance Smith
(Chief Chemist)

ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION 22/08/19 22/08/19
SAMPLES DG5-S DG5-D

pH		7.5	7.5
Total Dissolved Solids	mg/L	770	14400
Total Nitrogen	mg/L	1.9	5.5
Iron	mg/L	0.20	0.11
Manganese	mg/L	0.14	0.20
Aluminium	mg/L	<0.1	<0.1

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	130	5.655	4220	183.570
Calcium Ca++	125	6.238	340	16.966
Potassium K+	8.2	0.210	190	4.864
Magnesium Mg++	18	1.481	535	44.031
Ammonia (Total)	<0.1		4.8	0.343

TOTAL CATIONS		13.584		249.774
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Chloride Cl-	210	5.922	8020	226.164
Fluoride F-	0.16	0.008	0.28	0.015
Nitrate NO3-	1.7	0.027	<0.1	
Sulphate SO4--	96	1.997	1020	21.216
Bicarbonate HCO3-	345	5.658	435	7.134
Phosphate PO4---	0.12	0.004	0.20	0.006

TOTAL ANIONS		13.616		254.535
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ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION SAMPLES	22/08/19 DG6-S	22/08/19 DG6-D
pH	6.8	7.2
Total Dissolved Solids	12100	15900
Total Nitrogen	2.2	2.4
Iron	1.9	0.06
Manganese	0.34	0.77
Aluminium	<0.1	<0.1
	mg/L	meq/L
	mg/L	meq/L
Sodium Na+	3580	155.730
Calcium Ca++	235	11.727
Potassium K+	160	4.096
Magnesium Mg++	460	37.858
Ammonia (Total)	0.8	0.057
	mg/L	meq/L
	mg/L	meq/L
TOTAL CATIONS	209.468	282.707
Chloride Cl-	6440	181.608
Fluoride F-	0.36	0.019
Nitrate NO3-	0.18	0.003
Sulphate SO4--	850	17.680
Bicarbonate HCO3-	450	7.380
Phosphate PO4---	<0.1	<0.1
TOTAL ANIONS	206.690	280.378

ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION	22/08/19	22/08/19
SAMPLES	DG-7	DG-17

pH		7.3	7.3
Total Dissolved Solids	mg/L	92	1390
Total Nitrogen	mg/L	1.3	1.4
Iron	mg/L	0.31	0.12
Manganese	mg/L	0.11	0.32
Aluminium	mg/L	<0.1	<0.1

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	19	0.826	310	13.485
Calcium Ca++	10	0.499	86	4.291
Potassium K+	2.8	0.072	30	0.768
Magnesium Mg++	4.1	0.337	92	7.572
Ammonia (Total)	<0.1		0.8	0.057

TOTAL CATIONS		1.734		26.173
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Chloride Cl-	19	0.536	330	9.306
Fluoride F-	0.38	0.020	0.51	0.027
Nitrate NO3-	2.1	0.034	0.22	0.004
Sulphate SO4--	10	0.208	26	0.541
Bicarbonate HCO3-	55	0.902	950	15.580
Phosphate PO4---	0.37	0.012	1.7	0.054

TOTAL ANIONS		1.712		25.512
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ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION	22/08/19	22/08/19
SAMPLES	DG-21	DG-31

pH		6.5	7.0
Total Dissolved Solids	mg/L	1020	2930
Total Nitrogen	mg/L	1.9	0.6
Iron	mg/L	1.2	0.74
Manganese	mg/L	1.1	0.15
Aluminium	mg/L	<0.1	<0.1

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	260	11.310	705	30.668
Calcium Ca++	52	2.595	215	10.729
Potassium K+	10	0.256	29	0.742
Magnesium Mg++	44	3.621	93	7.654
Ammonia (Total)	0.2	0.014	<0.1	

TOTAL CATIONS		17.796		49.793
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Chloride Cl-	450	12.690	1230	34.686
Fluoride F-	0.15	0.008	<0.1	
Nitrate NO3-	<0.1		<0.1	
Sulphate SO4--	150	3.120	570	11.856
Bicarbonate HCO3-	90	1.476	230	3.772
Phosphate PO4---	0.12	0.004	<0.1	

TOTAL ANIONS		17.298		50.314
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ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION	22/08/19		22/08/19	
SAMPLES	DG-35		DG-36	
pH		6.9		7.2
Total Dissolved Solids	mg/L	655		660
Total Nitrogen	mg/L	3.5		0.1
Iron	mg/L	23		0.47
Manganese	mg/L	1.3		0.46
Aluminium	mg/L	<0.1		<0.1
	mg/L	meq/L	mg/L	meq/L
Sodium Na+	95	4.132	120	5.220
Calcium Ca++	73	3.643	66	3.293
Potassium K+	9.5	0.243	15	0.384
Magnesium Mg++	36	2.963	38	3.127
Ammonia (Total)	0.2	0.014	<0.1	
TOTAL CATIONS		10.995		12.024
Chloride Cl-	58	1.636	110	3.102
Fluoride F-	0.15	0.008	0.33	0.017
Nitrate NO3-	2.7	0.043	0.18	0.003
Sulphate SO4--	230	4.784	155	3.224
Bicarbonate HCO3-	270	4.428	335	5.494
Phosphate PO4---	<0.1		0.13	0.004
TOTAL ANIONS		10.899		11.844

ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION		22/08/19	22/08/19
SAMPLES		DG-36 DUP	FD1
pH		7.2	7.6
Total Dissolved Solids	mg/L	670	340
Total Nitrogen	mg/L	0.1	1.3
Iron	mg/L	0.45	0.60
Manganese	mg/L	0.47	0.08
Aluminium	mg/L	<0.1	<0.1

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	125	5.438	44	1.914
Calcium Ca++	66	3.293	72	3.593
Potassium K+	14	0.358	4.4	0.113
Magnesium Mg++	39	3.210	13	1.070
Ammonia (Total)	<0.1		<0.1	

TOTAL CATIONS		12.299		6.690
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Chloride Cl-	110	3.102	52	1.466
Fluoride F-	0.35	0.018	0.23	0.012
Nitrate NO3-	0.18	0.003	0.33	0.005
Sulphate SO4--	160	3.328	18	0.374
Bicarbonate HCO3-	340	5.576	295	4.838
Phosphate PO4---	0.15	0.005	0.11	0.003

TOTAL ANIONS		12.032		6.698
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ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION 22/08/19 22/08/19
SAMPLES FD2 MW5A1

pH		7.5	6.6
Total Dissolved Solids	mg/L	14700	115
Total Nitrogen	mg/L	5.4	3.1
Iron	mg/L	0.09	0.67
Manganese	mg/L	0.20	<0.01
Aluminium	mg/L	<0.1	<0.1

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	4260	185.310	13	0.566
Calcium Ca++	330	16.467	17	0.848
Potassium K+	180	4.608	3.1	0.079
Magnesium Mg++	525	43.208	4.5	0.370
Ammonia (Total)	4.7	0.336	<0.1	

TOTAL CATIONS 249.929 1.863

Chloride Cl-	7920	223.344	29	0.818
Fluoride F-	0.31	0.016	0.11	0.006
Nitrate NO3-	<0.1		9.8	0.158
Sulphate SO4--	1070	22.256	19	0.395
Bicarbonate HCO3-	420	6.888	26	0.426
Phosphate PO4---	0.24	0.008	<0.1	

TOTAL ANIONS 252.512 1.803

ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION SAMPLES	22/08/19 MW5A3		22/08/19 MW5B2S		
pH		6.9		7.4	
Total Dissolved Solids	mg/L	475		440	
Total Nitrogen	mg/L	2.1		1.1	
Iron	mg/L	4.6		1.2	
Manganese	mg/L	0.11		0.07	
Aluminium	mg/L	<0.1		<0.1	
		mg/L	meq/L	mg/L	meq/L
Sodium Na+		100	4.350	48	2.088
Calcium Ca++		49	2.445	92	4.591
Potassium K+		4.4	0.113	3.8	0.097
Magnesium Mg++		12	0.988	14	1.152
Ammonia (Total)		0.8	0.057	<0.1	
TOTAL CATIONS			7.953		7.928
Chloride Cl-		180	5.076	46	1.297
Fluoride F-		0.15	0.008	0.16	0.008
Nitrate NO3-		<0.1		<0.1	
Sulphate SO4--		14	0.291	39	0.811
Bicarbonate HCO3-		180	2.952	365	5.986
Phosphate PO4---		0.23	0.007	0.18	0.006
TOTAL ANIONS			8.334		8.108

ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION 22/08/19 22/08/19
SAMPLES MW5B2D MW5B4

pH		7.6	7.6
Total Dissolved Solids	mg/L	325	390
Total Nitrogen	mg/L	1.3	1.1
Iron	mg/L	0.55	0.09
Manganese	mg/L	0.07	0.06
Aluminium	mg/L	<0.1	<0.1

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	41	1.784	36	1.566
Calcium Ca++	75	3.743	100	4.990
Potassium K+	4.6	0.118	2.3	0.059
Magnesium Mg++	14	1.152	11	0.905
Ammonia (Total)	<0.1		<0.1	

TOTAL CATIONS		6.797		7.520
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Chloride Cl-	49	1.382	34	0.959
Fluoride F-	0.15	0.008	0.19	0.010
Nitrate NO3-	0.35	0.006	1.1	0.018
Sulphate SO4--	17	0.354	11	0.229
Bicarbonate HCO3-	300	4.920	375	6.150
Phosphate PO4---	<0.1		<0.1	

TOTAL ANIONS		6.670		7.366
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ANALYTICAL REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

DATE OF COLLECTION 22/08/19 22/08/19
SAMPLES DG15 BLANK

pH		7.5	7.1
Total Dissolved Solids	mg/L	350	<1
Total Nitrogen	mg/L	2.6	<0.1
Iron	mg/L	0.29	<0.01
Manganese	mg/L	0.09	<0.01
Aluminium	mg/L	<0.1	<0.1

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	44	1.914	<0.1	
Calcium Ca++	67	3.343	<0.1	
Potassium K+	3.3	0.084	<0.1	
Magnesium Mg++	15	1.235	<0.1	
Ammonia (Total)	0.3	0.021	<0.1	

TOTAL CATIONS 6.597

Chloride Cl-	37	1.043	<1
Fluoride F-	0.19	0.010	<0.1
Nitrate NO3-	0.31	0.005	<0.1
Sulphate SO4--	8	0.166	<2
Bicarbonate HCO3-	335	5.494	<1
Phosphate PO4---	<0.1		<0.1

TOTAL ANIONS 6.718

LABORATORY DUPLICATE REPORT

JOB NO: SAL27331
CLIENT ORDER: 119037

Sample Number	Analyte	Units	MDL	Sample Result	Duplicate Result	%RPD
DG-36	pH		0.1	7.2	7.2	0
DG-36	TDS	mg/L	1	660	670	1
DG-36	Sodium	mg/L	0.1	120	125	4
DG-36	Calcium	mg/L	0.1	66	66	0
DG-36	Potassium	mg/L	0.1	15	14	7
DG-36	Magnesium	mg/L	0.1	38	39	3
DG-36	Chloride	mg/L	1	110	110	0
DG-36	Fluoride	mg/L	0.1	0.33	0.35	6
DG-36	Nitrate	mg/L	0.1	0.18	0.18	0
DG-36	Sulphate	mg/L	2	155	160	3
DG-36	Bicarbonate	mg/L	1	335	340	1
DG-36	Phosphate	mg/L	0.1	0.13	0.15	14
DG-36	Ammonia	mg/L	0.1	<0.1	<0.1	0
DG-36	Total Nitrogen	mg/L	0.1	0.1	0.1	0
DG-36	Iron	mg/L	0.01	0.47	0.45	4
DG-36	Manganese	mg/L	0.01	0.46	0.47	2
DG-36	Aluminium	mg/L	0.1	<0.1	<0.1	0

Acceptance criteria:

RPD <50% for low level (<10xMDL)
 RPD <20% for medium level (10-50xMDL)
 RPD <10% for high level (>50xMDL)
 No limit applies at <2xMDL

MDL = Method Detection Limit

All results are within the acceptance criteria

ANALYTICAL REPORT

JOB NO: SAL27331

CLIENT ORDER: 119037

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory, in accordance with APHA Standard Methods of Water and Wastewater 22nd Edition, or other approved methods listed below:

4500B	pH
2540C	Total Dissolved Solids
3500B	Sodium Na+
3111B	Calcium Ca++
3500B	Potassium K+
3111B	Magnesium Mg++
4500D	Chloride Cl-
4500C	Fluoride F-
4500F	Nitrate NO3-
4110B	Sulphate SO4--
2320B	Bicarbonate HCO3-
4500F	Phosphate PO4---
4500G	Ammonia (Total)
4500B	Total Nitrogen
3111B	Iron
3111B	Manganese
3111D	Aluminium

**SYDNEY
ANALYTICAL
LABORATORIES**

Page 1 of 12

Office:
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ERMINGTON NSW 2115

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1/4 ABBOTT ROAD
SEVEN HILLS NSW 2147
Telephone: (02) 9838 8903
Fax: (02) 9838 8919
A.C.N. 003 614 695
A.B.N. 81 829 182 852
NATA No: 1884

ANALYTICAL REPORT for:

ENVIRONMENTAL & EARTH SCIENCES

PO BOX 380
NORTH SYDNEY 2059

ATTN: E.GRIFFITHS

JOB NO: SAL27419
CLIENT ORDER: 119037
DATE RECEIVED: 22/11/19
DATE COMPLETED: 05/12/19
TYPE OF SAMPLES: WATERS
NO OF SAMPLES: 16



LS
.....
Issued on 05/12/19
Lance Smith
(Chief Chemist)

ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION	21/11/19	21/11/19
SAMPLES	DG5-S	DG5-D

pH		7.1	7.2
Total Dissolved Solids	mg/L	810	13600
Total Nitrogen	mg/L	1.1	5.6
Iron (Dissolved)	mg/L	0.14	0.10

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	145	6.307	4020	174.870
Calcium Ca++	140	6.986	315	15.719
Potassium K+	7.9	0.202	140	3.584
Magnesium Mg++	18	1.481	520	42.796
Ammonia (Total)	0.2	0.014	5.3	0.378

TOTAL CATIONS		14.990		237.347
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Chloride Cl-	245	6.909	7300	205.860
Fluoride F-	0.19	0.010	0.30	0.016
Nitrate NO3-	0.58	0.009	<0.1	
Sulphate SO4--	100	2.080	960	19.968
Bicarbonate HCO3-	345	5.658	385	6.314
Phosphate PO4---	0.12	0.004	0.12	0.004

TOTAL ANIONS		14.670		232.162
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ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION 21/11/19 21/11/19
SAMPLES DG6-S DG6-D

pH		6.6	6.8
Total Dissolved Solids	mg/L	11100	17100
Total Nitrogen	mg/L	2.5	2.7
Iron (Dissolved)	mg/L	0.52	12

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	3190	138.765	4930	214.455
Calcium Ca++	220	10.978	400	19.960
Potassium K+	130	3.328	175	4.480
Magnesium Mg++	450	37.035	670	55.141
Ammonia (Total)	1.0	0.071	1.4	0.100

TOTAL CATIONS		190.177		294.136
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Chloride Cl-	6090	171.738	9220	260.004
Fluoride F-	0.34	0.018	0.23	0.012
Nitrate NO3-	0.18	0.003	<0.1	
Sulphate SO4--	750	15.600	1420	29.536
Bicarbonate HCO3-	390	6.396	485	7.954
Phosphate PO4---	<0.1		<0.1	

TOTAL ANIONS		193.755		297.506
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ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION SAMPLES	21/11/19 DG7		20/11/19 DG17	
pH			6.9	7.0
Total Dissolved Solids	mg/L		215	1220
Total Nitrogen	mg/L		0.7	1.8
Iron (Dissolved)	mg/L		0.24	0.33
	mg/L	meq/L	mg/L	meq/L
Sodium Na+	55	2.393	295	12.833
Calcium Ca++	9.1	0.454	81	4.042
Potassium K+	3.7	0.095	22	0.563
Magnesium Mg++	8.2	0.675	65	5.350
Ammonia (Total)	0.4	0.029	0.6	0.043
TOTAL CATIONS		3.646		22.831
Chloride Cl-	49	1.382	340	9.588
Fluoride F-	0.34	0.018	0.45	0.024
Nitrate NO3-	<0.1		<0.1	
Sulphate SO4--	62	1.290	55	1.144
Bicarbonate HCO3-	44	0.722	780	12.792
Phosphate PO4---	0.13	0.004	0.34	0.011
TOTAL ANIONS		3.416		23.559

ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION SAMPLES	21/11/19 DG21	21/11/19 DG31		
pH	6.4	6.6		
Total Dissolved Solids	1260	2820		
Total Nitrogen	0.9	0.8		
Iron (Dissolved)	1.9	0.46		
	mg/L	meq/L	mg/L	meq/L
Sodium Na+	290	12.615	695	30.233
Calcium Ca++	64	3.194	190	9.481
Potassium K+	26	0.666	23	0.589
Magnesium Mg++	50	4.115	76	6.255
Ammonia (Total)	0.3	0.021	0.3	0.021
TOTAL CATIONS		20.611		46.579
Chloride Cl-	555	15.651	1260	35.532
Fluoride F-	0.13	0.007	<0.1	
Nitrate NO3-	<0.1		<0.1	
Sulphate SO4--	195	4.056	490	10.192
Bicarbonate HCO3-	98	1.607	150	2.460
Phosphate PO4---	0.10	0.003	<0.1	
TOTAL ANIONS		21.324		48.184

ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION SAMPLES	20/11/19 DG35		20/11/19 DG36	
pH		6.7		6.8
Total Dissolved Solids	mg/L	505		1020
Total Nitrogen	mg/L	1.3		0.3
Iron (Dissolved)	mg/L	20		0.47
	mg/L	meq/L	mg/L	meq/L
Sodium Na+	74	3.219	215	9.352
Calcium Ca++	55	2.745	73	3.643
Potassium K+	7.9	0.202	15	0.384
Magnesium Mg++	35	2.881	44	3.621
Ammonia (Total)	1.3	0.093	<0.1	
TOTAL CATIONS		9.140		17.000
Chloride Cl-	58	1.636	175	4.935
Fluoride F-	0.15	0.008	0.29	0.015
Nitrate NO3-	<0.1		<0.1	
Sulphate SO4--	140	2.912	290	6.032
Bicarbonate HCO3-	255	4.182	350	5.740
Phosphate PO4---	<0.1		<0.1	
TOTAL ANIONS		8.738		16.722

ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION	20/11/19		21/11/19	
SAMPLES	DG36 DUP		FD1	
pH		6.8		6.0
Total Dissolved Solids	mg/L	990		135
Total Nitrogen	mg/L	0.4		3.7
Iron (Dissolved)	mg/L	0.45		0.12
	mg/L	meq/L	mg/L	meq/L
Sodium Na+	215	9.352	26	1.131
Calcium Ca++	72	3.593	11	0.549
Potassium K+	14	0.358	5.0	0.128
Magnesium Mg++	42	3.457	4.8	0.395
Ammonia (Total)	<0.1		<0.1	
TOTAL CATIONS		16.760		2.203
Chloride Cl-	170	4.794	31	0.874
Fluoride F-	0.28	0.015	<0.1	
Nitrate NO3-	<0.1		11	0.177
Sulphate SO4--	280	5.824	32	0.666
Bicarbonate HCO3-	355	5.822	24	0.394
Phosphate PO4---	<0.1		0.11	0.003
TOTAL ANIONS		16.455		2.114

ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION SAMPLES		20/11/19 DG15		20/11/19 MW5A1	
pH		7.2		6.4	
Total Dissolved Solids	mg/L	330		140	
Total Nitrogen	mg/L	1.5		3.7	
Iron (Dissolved)	mg/L	0.07		0.10	
		mg/L	meq/L	mg/L	meq/L
Sodium Na+		42	1.827	25	1.088
Calcium Ca++		62	3.094	10	0.499
Potassium K+		2.2	0.056	4.9	0.125
Magnesium Mg++		14	1.152	5.0	0.412
Ammonia (Total)		0.8	0.057	<0.1	
TOTAL CATIONS			6.186		2.124
Chloride Cl-		39	1.100	30	0.846
Fluoride F-		0.16	0.008	<0.1	
Nitrate NO3-		<0.1		11	0.177
Sulphate SO4--		10	0.208	33	0.686
Bicarbonate HCO3-		295	4.838	24	0.394
Phosphate PO4---		0.12	0.004	<0.1	
TOTAL ANIONS			6.158		2.103

ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION	21/11/19	21/11/19
SAMPLES	MW5A3	MW5B2S

pH		6.7	7.1
Total Dissolved Solids	mg/L	515	385
Total Nitrogen	mg/L	1.8	0.9
Iron (Dissolved)	mg/L	3.5	0.16

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	125	5.438	50	2.175
Calcium Ca++	43	2.146	86	4.291
Potassium K+	5.4	0.138	4.3	0.110
Magnesium Mg++	11	0.905	12	0.988
Ammonia (Total)	0.9	0.064	0.4	0.029

TOTAL CATIONS		8.691		7.593
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Chloride Cl-	200	5.640	45	1.269
Fluoride F-	0.13	0.007	0.14	0.007
Nitrate NO3-	<0.1		<0.1	
Sulphate SO4--	15	0.312	31	0.645
Bicarbonate HCO3-	185	3.034	340	5.576
Phosphate PO4---	<0.1		<0.1	

TOTAL ANIONS		8.993		7.497
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ANALYTICAL REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

DATE OF COLLECTION		21/11/19	21/11/19
SAMPLES		MW5B2D	BLANK
pH		7.3	7.0
Total Dissolved Solids	mg/L	350	<1
Total Nitrogen	mg/L	0.6	<0.1
Iron (Dissolved)	mg/L	0.05	<0.01
		mg/L	meq/L
Sodium Na+	44	1.914	<0.1
Calcium Ca++	75	3.743	<0.1
Potassium K+	4.6	0.118	<0.1
Magnesium Mg++	12	0.988	<0.1
Ammonia (Total)	0.6	0.043	<0.1
TOTAL CATIONS		6.806	
Chloride Cl-	55	1.551	<1
Fluoride F-	0.14	0.007	<0.1
Nitrate NO3-	<0.1		<0.1
Sulphate SO4--	17	0.354	<2
Bicarbonate HCO3-	290	4.756	<1
Phosphate PO4---	<0.1		<0.1
TOTAL ANIONS		6.668	

LABORATORY DUPLICATE REPORT

JOB NO: SAL27419
CLIENT ORDER: 119037

Sample Number	Analyte	Units	MDL	Sample Result	Duplicate Result	%RPD
DG36	pH		0.1	6.8	6.8	0
DG36	TDS	mg/L	1	1020	990	3
DG36	Sodium	mg/L	0.1	215	215	0
DG36	Calcium	mg/L	0.1	73	72	1
DG36	Potassium	mg/L	0.1	15	14	7
DG36	Magnesium	mg/L	0.1	44	42	5
DG36	Chloride	mg/L	1	175	170	3
DG36	Fluoride	mg/L	0.1	0.29	0.28	3
DG36	Nitrate	mg/L	0.1	<0.1	<0.1	0
DG36	Sulphate	mg/L	2	290	280	4
DG36	Bicarbonate	mg/L	1	350	355	1
DG36	Phosphate	mg/L	0.1	<0.1	<0.1	0
DG36	Ammonia	mg/L	0.1	<0.1	<0.1	0
DG36	Total Nitrogen	mg/L	0.1	0.3	0.4	25
DG36	Fe Dissolved	mg/L	0.01	0.47	0.45	4

Acceptance criteria:

RPD <50% for low level (<10xMDL)
RPD <20% for medium level (10-50xMDL)
RPD <10% for high level (>50xMDL)
No limit applies at <2xMDL

MDL = Method Detection Limit

All results are within the acceptance criteria

ANALYTICAL REPORT

JOB NO: SAL27419

CLIENT ORDER: 119037

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory, in accordance with APHA Standard Methods of Water and Wastewater 23rd Edition, or other approved methods listed below:

4500B	pH
2540C	Total Dissolved Solids
3500B	Sodium Na+
3111B	Calcium Ca++
3500B	Potassium K+
3111B	Magnesium Mg++
4500D	Chloride Cl-
4500C	Fluoride F-
4500F	Nitrate NO3-
4110B	Sulphate SO4--
2320B	Bicarbonate HCO3-
4500F	Phosphate PO4---
4500G	Ammonia (Total)
4500B	Total Nitrogen
3111B	Iron (Dissolved)



APPENDIX D: RPD TABLES

Date

22/08/2019

Quarterly RPD TABLE - Copy and Paste into Quarterly Report

Analyte	MW5B2D	FD1	RPD (%)
pH (lab)	7.6	7.6	0.0
TDS	325	340	4.5
Na ⁺	41	44	7.1
Ca ²⁺	75	72	4.1
K ⁺	4.6	4.4	4.4
Mg ²⁺	14	13	7.4
Cl ⁻	49	52	5.9
F ⁻	0.15	0.23	42.1
NO ₃ ⁻	0.35	0.33	5.9
SO ₄ ²⁻	17	18	5.7
HCO ₃ ⁻	300	295	1.7
PO ₄ ³⁻	0.1	0.11	9.5
NH ₄ -N	0.1	< 0.1	NC
T.ALK	-	-	NC
Total P	0	0	NC
SALINITY	0	0	NC
EC (lab)	0	0	NC

Notes:

1. results are expressed in mg/L;
2. RPD - Relative Percentage Difference;
3. NC - RPD not calculable due to non-detect values
4. values above the guidelines are **bolded**

	Acceptable RPDs for each LOR multiplier range are: 80 (5-10 x LOR); 50 (10-30 x LOR); 30 (
	Highest concentration < 5 x LOR = PASS
	RPD exceeds acceptable limits

> 30 x LOR)

Date

22/08/2019

Quarterly RPD TABLE - Copy and Paste into Quarterly Report

Analyte	DG-5D	FD2	RPD (%)
pH (lab)	7.5	7.5	0.0
TDS	14400	14700	2.1
Na ⁺	4220	4260	0.9
Ca ²⁺	340	330	3.0
K ⁺	190	180	5.4
Mg ²⁺	535	525	1.9
Cl ⁻	8020	7920	1.3
F ⁻	0.28	0.31	10.2
NO ₃ ⁻	<0.1	<0.1	NC
SO ₄ ²⁻	1020	1070	4.8
HCO ₃ ⁻	435	420	3.5
PO ₄ ³⁻	0.2	0.24	18.2
NH ₄ -N	4.8	4.7	2.1
T.ALK	-	-	NC
Total P	0	0	NC
SALINITY	0	0	NC
EC (lab)	0	0	NC

Notes:

1. results are expressed in mg/L;
2. RPD - Relative Percentage Difference;
3. NC - RPD not calculable due to non-detect values
4. values above the guidelines are **bolded**

Acceptable RPDs for each LOR multiplier range are: 80 (5-10 x LOR); 50 (10-30 x LOR); 30 (

Highest concentration < 5 x LOR = PASS

RPD exceeds acceptable limits

> 30 x LOR)

Date

20/11/2019

Quarterly RPD TABLE - Copy and Paste into Quarterly Report

Analyte	MWSA1	FD1	RPD (%)
pH (lab)	5.8	6	3.4
TDS	140	135	3.6
Na ⁺	25	26	3.9
Ca ²⁺	10	11	9.5
K ⁺	4.9	5	2.0
Mg ²⁺	5	4.8	4.1
Cl ⁻	30	31	3.3
F ⁻	0.1	<0.1	NC
NO ₃ ⁻	11	11	0.0
SO ₄ ²⁻	33	32	3.1
HCO ₃ ⁻	24	24	0.0
PO ₄ ³⁻	0.1	0.11	9.5
NH ₄ -N	0.1	< 0.1	NC
T.ALK	-	-	NC
Total P	0	0	NC
SALINITY	0	0	NC
EC (lab)	0	0	NC

Notes:

1. results are expressed in mg/L;
2. RPD - Relative Percentage Difference;
3. NC - RPD not calculable due to non-detect values
4. values above the guidelines are **bolded**

Acceptable RPDs for each LOR multiplier range are: 80 (5-10 x LOR); 50 (10-30 x LOR); 30 (

Highest concentration < 5 x LOR = PASS

RPD exceeds acceptable limits

> 30 x LOR)